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Superfund Chemical Data Matrix (SCDM), NPL, Superfund, US EPA - Microsoft Internet Explorer

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Superfund Chemical Data Matrix (SCDM)

The Superfund Chemical Data Matrix (SCDM) is a source for factor values and benchmark values applied when evaluating potential National Priorities List (NPL) sites using the Hazard Ranking System (HRS). Factor values are part of the HRS mathematical equation for determining the relative threat posed by a hazardous waste site and reflect hazardous substance characteristics, such as toxicity and persistence in the environment, substance mobility, and potential for bioaccumulation. Benchmarks are environment- or health-based substance concentration limits developed by or used in other EPA regulatory programs. SCDM contains HRS factor values and benchmark values for hazardous substances that are frequently found at sites evaluated using the HRS, as well as the physical, chemical, and radiological data used to calculate those values. The accompanying SCDM Methodology report describes how data are selected or calculated for inclusion in SCDM and how SCDM data, HRS factor values, and benchmarks are presented in formatted printouts.

On January 28, 2004, EPA released an updated SCDM with many revisions to the HRS factor values and benchmarks. These revisions were necessary both because of updates in the SCDM procedures used to assign HRS factor values and benchmarks and because of revisions to pertinent standards and criteria for individual hazardous substances and their associated characteristics.

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used to assign risk factor values and benchmarks and because of revisions to pertinent standards and criteria for individual hazardous substances and their associated characteristics.

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Superfund Chemical Data Matrix Report

- SCDM Methodology Report PDF
 - [Part 1 - Table of Contents and Introduction PDF](#) (283.3 KB, 5 pages)
 - [Part 2 - Data Selection Methodology PDF](#) (1.90 MB, 24 pages)
 - [Part 3 - Calculations in SCDM PDF](#) (1.19 MB, 28 pages)
- Appendix A - Chemical Data, Factor Values, and Benchmarks for Chemical Substances PDF
 - [Part 1 - Acenaphthene to Cesium PDF](#) (1.62 MB, 70 pages)
 - [Part 2 - Cesium 137\(+D\) \(radionuclide\) to Dichloropropane, 1,2- PDF](#) (1.66 MB, 70 pages)
 - [Part 3 - Dichloropropene, 1,3- to Hexachlorodibenzofuran 1,2,3,7,8,9- PDF](#) (1.65 MB, 70 pages)
 - [Part 4 - Hexachlorodibenzofuran 2,3,4,6,7,8- to Plutonium 236 \(radionuclide\) PDF](#) (1.57 MB, 70 pages)
 - [Part 5 - Plutonium 238 \(radionuclide\) to Thorium 231 \(radionuclide\) PDE](#) (1.60 MB, 70 pages)
 - [Part 6 - Thorium 232 \(radionuclide\) to Zinc 65 \(radionuclide\) and Footnotes PDF](#) (1.43 MB, 61 pages)

http://www.epa.gov/superfund/sites/npl/hrsres/tools/method_2.pdf

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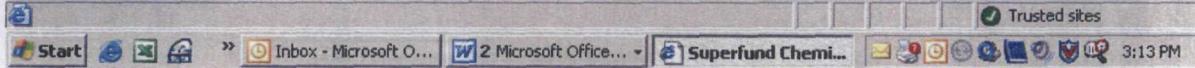
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- o [Part 6 - Thorium 232 \(radionuclide\) to Zinc 65 \(radionuclide\) and Footnotes PDF \(1.43 MB, 61 pages\)](#)
- [Appendix B1 - Hazardous Substance Factor Values PDF \(155.8 KB, 15 pages\)](#)
- [Appendix BII - Hazardous Substance Benchmarks PDF \(413.5 KB, 32 pages\)](#)
- [Appendix C - Hazardous Substance Synonyms Report PDF \(72.8 KB, 3 pages\)](#)
- SCDM Interim Revised Values for Ammonia; Atrazine; Dibutyltin; Furfural; Nitrobenzene; Nitrosodimethylamine, N-; Perchlorate; Tributyltin; Tributyltin Oxide; and Trichloroethylene (TCE)
 - o [Ammonia Appendix A PDF \(190.69 KB, 7 pages\)](#)
 - o [Ammonia Appendices B1 & BII PDF \(135.42 KB, 6 pages\)](#)
 - o [Atrazine Appendix A PDF \(143.3 KB, 5 pages\)](#)
 - o [Atrazine Appendices B1 & BII PDF \(125.6 KB, 7 pages\)](#)
 - o [Dibutyltin Appendix A PDF \(190 KB, 7 pages\)](#)
 - o [Dibutyltin Appendices B1 & BII PDF \(125.52 KB, 6 pages\)](#)
 - o [Furfural Appendix A PDF \(201.2 KB, 5 pages\)](#)
 - o [Furfural Appendices B1 & BII PDF \(64.8 KB, 1 page\)](#)
 - o [Nitrobenzene Appendix A PDF \(205.2 KB, 5 pages\)](#)
 - o [Nitrobenzene Appendices B1 & BII PDF \(50.7 KB, 1 page\)](#)
 - o [Nitrosodimethylamine, N- Appendix A PDF \(207.1 KB, 5 pages\)](#)
 - o [Nitrosodimethylamine, N- Appendices B1 & BII PDF \(137.7 KB, 6 page\)](#)
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 - o [Perchlorate Appendices B1 & BII PDF \(59 KB, 7 pages\)](#)
 - o [Tributyltin Appendix A PDF \(180.49 KB, 7 pages\)](#)
 - o [Tributyltin Appendices B1 & BII PDF \(127.49 KB, 6 pages\)](#)
 - o [Tributyltin Oxide Appendix A PDF \(197.17 KB, 7 pages\)](#)
 - o [Tributyltin Oxide Appendices B1 & BII PDF \(129.29 KB, 6 pages\)](#)
 - o [Trichloroethylene \(TCE\) Appendix A PDF \(182.75 KB, 7 pages\)](#)
 - [Trichloroethylene \(TCE\) Appendices B1 & BII PDF \(26.62 KB, 1 page\)](#)



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Please note that the January 2004 SCDM was developed by compiling a list of CERCLA hazardous substances used in the scoring of NPL sites since 1990. The previous SCDM versions were developed using all substances ever scored at a site using the original HRS. The January 2004 SCDM does not include any substance that has not been used in the scoring of a site since 1990, even if previously listed in SCDM.

There are [17 new entries](#) [PDF: 41.3 KB, 1 page] (with new CAS Numbers) in the January 2004 version of SCDM that were not in the 1996 version. There are [235 fewer entries](#) [PDF: 57.6 KB, 5 pages]. Some of these changes resulted from new naming conventions and more specific identification of isomers and congeners. Also, some substances were removed because they were pollutants and contaminants and not CERCLA hazardous substances.

NOTE: Please do not assume that any substance not listed in the January 2004 SCDM cannot be used for HRS scoring. The number of entries was reduced to save resources in developing, updating, and tracking changes in chemical properties. If values are needed for a substance that was not listed in the January 2004 SCDM and are thought to be critical to the listing decision, please request the value by calling the SCDM Helpline. As a preliminary value (for screening purposes only), the former 1996 value associated with the substance can be used, and EPA will verify the new value if necessary. For all technical questions concerning SCDM, please contact the SCDM Helpline.

For further technical SCDM information, contact:
SCDM Helpline
Available weekdays. 9:00 - 5:00 EST

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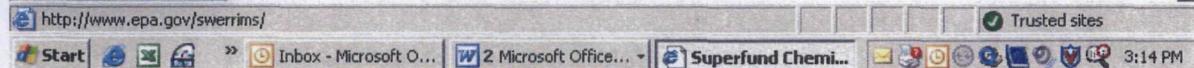
For further technical SCDM information, contact:
SCDM Helpline
Available weekdays, 9:00 - 5:00 EST
Phone: (703) 461-2019
Email: SCDM@csc.com

For other SCDM information, contact:
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SUPERFUND CHEMICAL DATA MATRIX

Date: 10/23/2006

Chemical: Trichloroethylene (TCE)

CAS Number: 000079-01-6

TOXICITY				PHYSICAL CHARACTERISTICS			
Parameter	Value	Unit	Source	Parameter	Value	Unit	Source
Oral RfD:	3.0E-4	mg/kg/day	LIVECHEM	Metal Contain:	No		
Inhal RfD:	1.1E-2	mg/kg/day	LIVECHEM	Organic:	Yes		
Oral Slope:	4.0E-1	(mg/kg/day)^-1	LIVECHEM	Gas:	Yes		
Oral Wt-of-Evid:	B2			Particulate:	No		
Inhal Slope:		(mg/kg/day)^-1		Radionuclide:	No		
Inhal Wt-of-Evid:				Rad. Element:	No		
Oral ED10:	1.0E+1	mg/kg/day	EPA_ED10	Molecular Weight:	1.3E+2		
Oral ED10 Wgt:	B2			Density:	1.5E+0	g/mL @ 20.00 C	
Inhal ED10:	1.0E+1	mg/kg/day	EPA_ED10				
Inhal ED10 Wgt:	B2						
Oral LD50:	6.0E+3	mg/kg	ACGIH				
Dermal LD50:	2.0E+4	mg/kg	RTECS				
Gas Inhal LC50:	4.8E+3	ppm	RTECS				
Dust Inhal LC50:	3.3E+1	mg/L	RTECS				
ACUTE							
Fresh CMC:		µg/L					
Salt CMC:		µg/L					
CHRONIC							
Fresh CCC:		µg/L					
Salt CCC:		µg/L					
Fresh Ecol LC50:	1.9E+3	µg/L	ECOTOX				
Salt Ecol LC50:	1.2E+4	µg/L	ECOTOX				
PERSISTENCE				MOBILITY			
Parameter	Value	Unit	Source	Parameter	Value	Unit	Source
LAKE - Halflives							
Hydrolysis:	3.2E+2	days	FATERATE	Vapor Press:	7.3E+1	Torr	CHEMFATE
Volatility:	1.0E+2	days	THOMAS	Henry's Law:	1.0E-2	atm-m3/mol	CHEMFATE
Photolysis:		days		Water Solub:	1.5E+3	mg/L	CHEMFATE
Biodeg:	3.6E+2	days	FATERATE	Distrib Coef:	3.3E-1	ml/g	SSG_KD
Radio:		days		Geo Mean Sol:		mg/L	
RIVER - Halflives							
Hydrolysis:	3.2E+2	days	FATERATE				
Volatility:	1.1E+0	days	THOMAS				
Photolysis:		days					
Biodeg:	3.6E+2	days	FATERATE				
Radio:		days					
Log Kow:	2.4E+0		CHEMFATE				
CLASS INFORMATION				BIOACCUMULATION			
Class	Parent Substance			Parameter	Value	Unit	Source
				FOOD CHAIN			
				Fresh BCF:	1.7E+1		ECOTOX
				Salt BCF:			
ENVIRONMENTAL							
				Fresh BCF:	1.7E+1		ECOTOX
				Salt BCF:			
				Log Kow:	2.4E+0		CHEMFATE
				Water Solub:	1.5E+3	mg/L	CHEMFATE
				Geo Mean Sol:			
OTHER DATA				OTHER DATA			
				Melting Point:	-8.5E+1	C	
				Boiling Point:	8.7E+1	C	
				Formula:	C2 H Cl3		

SUPERFUND CHEMICAL DATA MATRIX

Date: 10/23/2006

Chemical: Trichloroethylene (TCE)

CAS Number: 000079-01-6

ASSIGNED FACTOR VALUES

AIR PATHWAY

GROUND WATER PATHWAY

SOIL EXPOSURE PATHWAY

Parameter	Value
Toxicity:	10000
Gas Mobility:	1.0000
Gas Migration:	17

Parameter	Value
Toxicity:	10000
Water Solub:	1.5E+3
Distrib:	3.3E-1
Geo Mean Sol:	
Mobility:	
Liquid Karst:	1.0E+0
Non Karst:	1.0E+0
Non Liq. Karst:	1.0E+0
Non Karst:	1.0E+0

Parameter	Value
Toxicity:	10000

SURFACE WATER PATHWAY

DRINKING WATER

HUMAN FOOD CHAIN

ENVIRONMENTAL

Parameter	Value
Toxicity:	10000

Parameter	Value
Toxicity:	10000

Parameter	Value
Fresh Tox:	100
Salt Tox:	10

Persistence	
River:	0.4000
Lake:	1.0000

Persistence	
River:	0.4000
Lake:	1.0000

Persistence	
River:	0.4000
Lake:	1.0000

Bioaccumulation	
Fresh:	50.0
Salt:	50.0

Bioaccumulation	
Fresh:	50.0
Salt:	50.0

BENCHMARKS

AIR PATHWAY

GROUND WATER PATHWAY

SOIL EXPOSURE PATHWAY

RADIOMUCLE

Parameter	Value	Unit	Parameter	Value	Unit	Parameter	Value	Unit	Parameter	Value	Unit
NAAQS/NESHAPS:		$\mu\text{g}/\text{m}^3$	MCL/MCLG:	5.0E-3	mg/L	Cancer Risk:	1.6E+0	mg/kg	MCL:		pCi/L
Cancer Risk:		mg/m^3	Cancer Risk:	2.1E-4	mg/L	Non Cancer Risk:	2.3E+1	mg/kg	UMTRCA:		pCi/kg
Non Cancer Risk:	4.2E-2	mg/m^3	Non Cancer Risk:	1.1E-2	mg/L				CANCER RISK		
									Air:		pCi/m^3
									DW:		pCi/L
									FC:		pCi/kg
									Soil Ing:		pCi/kg
									Soil Gam:		pCi/kg

SURFACE WATER PATHWAY

DRINKING WATER

HUMAN FOOD CHAIN

ENVIRONMENTAL

Parameter	Value	Unit	Parameter	Value	Unit	Parameter	Value	Unit
MCL/MCLG:	5.0E-3	mg/L	FDAAL:		ppm	ACUTE		
Cancer Risk:	2.1E-4	mg/L	Cancer Risk:	7.9E-3	mg/kg	Fresh CMC:		$\mu\text{g}/\text{L}$
Non Cancer Risk:	1.1E-2	mg/L	Non Cancer Risk:	4.1E-1	mg/kg	Salt CMC:		$\mu\text{g}/\text{L}$
						CHRONIC		
						Fresh CCC:		$\mu\text{g}/\text{L}$
						Salt CCC:		$\mu\text{g}/\text{L}$

Footnote Code	Footnote Description
A	This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.
B	This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.
C	This criterion is based on carcinogenicity of 10^4 risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10^4 , move the decimal point in the recommended criterion one place to the right).
D	Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria," October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR§131.36(b)(1). Conversion Factors applied in the table can be found in Appendix A to the Preamble- Conversion Factors for Dissolved Metals (which is attached below).
E	The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardness may be calculated from the following: CMC (dissolved) = $\exp\{m_A [\ln(\text{hardness})] + b_A\}$ (CF), or CCC (dissolved) = $\exp\{m_C [\ln(\text{hardness})] + b_C\}$ (CF) and the parameters specified in Appendix B- Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent (which is attached below).
F	Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = $\exp(1.005(\text{pH}) - 4.869)$; CCC = $\exp(1.005(\text{pH}) - 5.134)$. Values displayed in table correspond to a pH of 7.8.
G	This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/5-80-046), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.
H	No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the 1986 <i>Quality Criteria for Water</i> . Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.
I	This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).
J	This fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175 kg/day.
K	This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the 1995 Updates: <i>Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water</i> , (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.
L	The CMC = $1/[(f_1/\text{CMC}1) + (f_2/\text{CMC}2)]$ where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 $\mu\text{g/l}$ and 12.82 $\mu\text{g/l}$, respectively.
M	EPA is currently reassessing the criteria for arsenic.
N	This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)
O	The derivation of the CCC for this pollutant (Endrin) did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
P	Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.
Q	This recommended water quality criterion is expressed as μg free cyanide (as CN)/L.
R	This value for selenium was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change substantially in the near future.
S	This recommended water quality criterion for arsenic refers to the inorganic form only.

Footnote Code	Footnote Description
T	This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996- CMC or 0.922- CCC) that was used in the GLI to convert this to a value that is expressed in terms of dissolved metal.
U	The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
V	This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
W	Although EPA has not published a completed criteria document for butylbenzyl phthalate it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.
X	There is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.
Y	This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
Z	A more stringent MCL has been issued by EPA. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.
aa	This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated biphenyls (EPA 440/5-80-068), Toxaphene (EPA 440/5-86-006). This CCC is currently based on the Final Residue Value (FRV) procedure. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.
bb	This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (<i>Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses</i> , PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 882-R-01-001), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5-84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87-003).
cc	When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
dd	The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 µg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.
ee	This recommended water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5-84-026, January 1985). The saltwater CCC of 0.025 µg/L given on page 23 of the criteria document is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
ff	This recommended water quality criterion was derived in <i>Ambient Water Quality Criteria Saltwater Copper Addendum</i> (Draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60FR22228- 222237, May 4, 1995).
gg	EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.
hh	This recommended water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is methylmercury, this criterion will probably be under protective. In addition, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived.
ii	This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
F2	The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).
G2	This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (<i>Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses</i> , PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chlorpyrifos (EPA 440/5-86-005).
I2	This value for aluminum is expressed in terms of total recoverable metal in the water column.
L2	There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH= 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured.

Footnote Code	Footnote Description
jj	Freshwater criteria are pH, temperature, and life stage dependent. See calculation of freshwater ammonia criterion listed below. Also, see: http://www.epa.gov/ostwater/criteria/ammonia/technical.html
kk	Saltwater criteria are pH and temperature dependent. See table below. See: http://www.epa.gov/ostwater/criteria/ammonia/technical.html
ll	The ambient aquatic water quality criteria for tributyltin oxide was obtained by dividing the ambient aquatic water criteria for tributyltin by 0.9477. See the <i>Ambient Aquatic Life Water Quality Criteria for Tributyltin (TBT) - Final</i> (EPA, December 2003, EPA 822-R-03-031).

Conversion Factors for Dissolved Metals				
Metal	Conversion Factor Freshwater CMC	Conversion Factor Freshwater CCC	Conversion Factor Saltwater CMC	Conversion Factor Saltwater CMC
Arsenic	1.000	1.000	1.000	1.000
Cadmium	1.136672-[$\ln(\text{hardness})(0.041838)$]	1.101672-[$\ln(\text{hardness})(0.041838)$]	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	1.46203-[$\ln(\text{hardness})(0.145712)$]	1.46203-[$\ln(\text{hardness})(0.145712)$]	0.951	0.951
Mercury	0.85	0.85	0.85	0.85
Nickel	0.998	0.997	0.990	0.990
Selenium	--	--	0.998	0.998
Silver	0.85	--	0.85	--
Zinc	0.978	0.986	0.946	0.946

Parameters for Calculating Freshwater Dissolved Metals That are Hardness Dependent					Conversion Factors (CF)	
Chemical	m_A	b_A	m_C	b_C	CMC	CCC
Cadmium	1.0166	-3.924	0.7409	-4.719	1.136672-[$\ln(\text{hardness})(0.041838)$]	1.101672-[$\ln(\text{hardness})(0.041838)$]
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860
Copper	0.9422	-1.700	0.8545	-1.702	0.960	0.960
Lead	1.273	-1.460	1.273	-4.705	1.46203-[$\ln(\text{hardness})(0.145712)$]	1.46203-[$\ln(\text{hardness})(0.145712)$]
Nickel	0.8460	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.59	--	--	0.85	--
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Hardness-dependent metals' criteria may be calculated from the following:

$$\text{CMC (dissolved)} = \exp \{m_A [\ln(\text{hardness})] + b_A\} \text{ (CF)}$$

$$\text{CCC (dissolved)} = \exp \{m_C [\ln(\text{hardness})] + b_C\} \text{ (CF)}$$

Calculation of Freshwater Ammonia Criterion

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations:

Where salmonid fish are present:

$$CMC = (0.275/(1 + 10^{7.204-pH}) + (39.0/(1 + 10^{pH-7.204}))$$

Or where salmonid fish are not present:

$$CMC = (0.411/(1 + 10^{7.204-pH}) + (58.4/(1 + 10^{pH-7.204}))$$

- 2A. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equations:

When fish early life stages are present:

$$CCC = ((0.0577/(1 + 10^{7.688-pH}) + (2.487/(1 + 10^{pH-7.688})) \times \text{MIN}(2.85, 1.45 \cdot 10^{0.028(25-T)})$$

When fish early life stages are absent:

$$CCC = ((0.0577/(1 + 10^{7.688-pH}) + (2.487/(1 + 10^{pH-7.688}))) \times 1.45 \cdot 10^{0.028(25-\text{MAX}(T,7))}$$

- 2B. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas Migration	Air Gas Mobility	Gas Part		
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh						
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt	Fresh	Salt			
Acenaphthene	000083-32-9	10	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	0.4000	0.4000	500.0	500.0	500.0	500.0	10000	1000*	11	0.2000	Yes	Yes	
Acenaphthylene	000208-96-8	0	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	0.4000	1.0000	500.0	500.0	500.0	500.0	0	0	11	0.0200	Yes	Yes	
Acetone	000067-64-1	I*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0700*	0.0700	0.5	0.5	0.5	0.5	100	1	17	1.0000	Yes	No	
Acrolein	000107-02-8	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0700	0.0700	500.0	500.0	500.0	500.0	10000	1000	17	1.0000	Yes	No	
Acrylamide	000079-06-1	I0000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	1.0000	5.0	5.0	5.0	5.0	10	10	6	0.2000	Yes	Yes
Alachlor**	015972-60-8	100	1.00E+00	1.00E-02	1.00E+00	1.00E-02	0.4000	0.0700	500.0	500.0	50.0	50.0	1000	1000	6	0.0200	Yes	Yes	
Aldrin	000309-00-2	10000	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	5000.0*	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes	
Aluminum	007429-90-5	0	1.00E+00	1.00E+00*	1.00E+00*	1.00E+00*	1.0000	1.0000	50.0	50.0	5000.0*	5000.0*	100	100	...	...	No	Yes
Americium**	007440-35-9	0	1.00E+00	1.00E+00	...	...	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	0	0	...	...	No	Yes
Aniline	000062-53-3	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	0.4000	50.0*	50.0*	500.0	500.0	10000	10	11	1.0000	Yes	No
Anthracene	000120-12-7	10	1.00E+00	1.00E-04*	2.00E-03	2.00E-07*	0.4000*	0.4000*	50000.0*	50000.0*	50000.0*	50000.0*	10000	10000*	6	0.0020	Yes	Yes	
Antimony	007440-36-0	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0*	5.0*	5.0	50.0*	100	100	...	...	No	Yes
Arsenic	007440-38-2	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0	500.0	5000.0*	500.0	10	100	...	...	No	Yes
Asbestos	001332-21-4	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	0	0	...	...	No	Yes
Barium	007440-39-3	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	1	1	No	Yes	

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** Indicates new hazardous substance in current version of chemical data (JAN04).

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas Migration	Air Gas Mobility	Gas Part			
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh							
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt						
Benz(a)anthracene	000056-55-3	1000	1.00E+00	1.00E-04*	2.00E-05	2.00E-09*	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes		
Benzene	000071-43-2	1000*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.4000	5000.0	5000.0	5000.0*	50000.0	1000*	1000	17	1.0000	Yes	No		
Benzidine	000092-87-5	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	0.4000	50.0	50.0	5000.0*	5000.0*	100*	100*	0	0.0002	Yes	Yes		
Benzo(a)pyrene	000059-32-8	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0*	50000.0	50000.0*	10000	1000	6	0.0002	Yes	Yes		
Benzo(g,h,i)perylene	000191-24-2	0	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No	Yes
Benzo(j,k)fluorene (Fluoranthene)	000206-44-0	100	1.00E+00	1.00E-04*	2.00E-03	2.00E-07*	1.0000	1.0000	500.0*	5000.0	5000.0*	5000.0	10000	10000*	6	0.0020	Yes	Yes		
Benzo(k)fluoranthene	000207-08-9	100	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	6	0.0002	Yes	Yes		
Beryllium	007440-41-7	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	50.0	50.0	50.0	50.0	0	0	...	...	No	Yes
Bis (2-ethylhexyl) phthalate	000117-81-7	100	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	50000.0	500.0*	50000.0	5000.0*	1000	1000*	6	0.0002*	Yes	Yes		
Boron	007440-42-8	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	1.0000	0.5	0.5	0.5	0.5	0	0	...	...	No	Yes
Bromodichloromethane	000075-27-4	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	0	0	17	1.0000	Yes	No		
Butylbenzyl phthalate	000035-68-7	10	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	1.0000	1.0000	500.0	500.0	500.0	500.0	1000*	1000*	6	0.0020	Yes	Yes		
Cadmium	0074-40-43-9	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	5000.0	50000.0*	50000.0*	50000.0*	10000*	1000	...	...	No	Yes
Carbazole	000036-74-8	10	1.00E+00	1.00E-02*	2.00E-01	2.00E-03*	0.4000	0.0700	500.0	500.0	500.0	500.0	1000*	1000*	6*	0.0200*	Yes	Yes		

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas Migration	Gas Mobility	Air Gas Part			
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh							
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt						
Carbon disulfide	000075-15-0	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.4000	500.0	500.0	500.0	500.0	100	10*	17	1.0000	Yes	No		
Carbon tetrachloride	000056-23-5	1000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	500.0*	500.0*	100	10*	17	1.0000	Yes	No		
Cesium	007440-46-2	0	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0*	50.0*	5.0*	50.0*	0	0	...	...	No	Yes
Chlordane	000057-74-9	10000	1.00E+00	1.00E-02	2.00E-03	2.00E-05	1.0000	1.0000	5000.0*	5000.0*	50000.0	50000.0*	10000	10000	6	0.0020	Yes	Yes		
Chlordane, alpha-	005103-71-9	10000*	1.00E+00	1.00E-02	2.00E-03	2.00E-05	1.0000	1.0000	50000.0*	50000.0*	50000.0*	50000.0*	10000	10000	11*	0.0200*	Yes*	Yes		
Chlordane, gama-	005566-34-7	10000*	1.00E+00	1.00E-02	2.00E-03	2.00E-05	1.0000	1.0000	50000.0	50000.0	50000.0*	50000.0*	0*	0*	6*	0.0020*	Yes*	Yes		
Chlorobenzene	000108-90-7	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007	0.0700	50.0	50.0	5000.0*	5000.0*	10000*	100	17	1.0000	Yes	No		
Chloroform	000067-66-3	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	500.0*	500.0*	100*	10	17	1.0000	Yes	No	
Chromium	007440-47-3	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	500.0*	500.0	500.0*	500.0	10000*	100	...	...	No	Yes
Chromium(III)	016065-83-1	1	1.00E+00	1.00E-04	1.00E+00	1.00E-04	1.0000	1.0000	500.0	500.0	500.0	500.0	100*	100*	...	...	No	Yes
Chromium(VI)	018540-29-9	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0	500.0	5.0	500.0	100	100	...	...	No	Yes
Chrysene	000218-01-9	10	1.00E+00	1.00E-04*	2.00E-05	2.00E-09*	1.0000	1.0000	5.0*	5.0*	5000.0	500.0	1000	1000	6	0.0002	Yes	Yes		
Cobalt	007440-48-4	10*	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5000.0*	5000.0*	5000.0	5000.0	0	0	...	...	No	Yes
Copper	007440-50-8	0	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	500.0*	50000.0	50000.0*	50000.0	1000*	1000*	...	...	No	Yes
Cumene	000098-82-8	10*	1.00E+00	1.00E-02*	2.00E-01	2.00E-03*	0.4000	0.4000	500.0	500.0	500.0	500.0	100	1	17	1.0000	Yes	No		

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air	Gas	Air	Gas	
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh		Salt	Fresh	Salt	Migration	Part
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt	Air	Gas	Gas	Gas	
Cyanamide**	000420-04-2	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	1.0000	0.5	0.5	0.5	0.5	10	100	6	0.2000	Yes	Yes	
Cyanide	000057-12-5	100	1.00E+00	1.00E+00	1.00E+00*	1.00E+00*	1.0000*	1.0000*	0.5	0.5	0.5	0.5	1000	1000	17*	1.0000*	Yes*	No*	
DDD	000072-54-8	100	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50.0*	10000	10000	6	0.0020	Yes	Yes	
DDE	000072-55-9	100	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes	
DDT	000050-29-3	1000	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes	
Di-n-butyl phthalate	000084-74-2	10	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	1000	10000	6	0.0200	Yes	Yes	
Di-n-octyl phthalate	000117-84-0	100	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	500.0	500.0	50000.0*	50000.0*	0	0	6	0.0020	Yes	Yes	
Dibenz(a,h)anthracene	000053-70-3	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No	Yes
Dibenzofuran	000132-64-9	1000*	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	1.0000	1.0000	500.0	500.0	500.0	500.0	1000*	1000*	11	0.0200	Yes	Yes	
Dibromo-3-chloropropane, 1,2-	000096-12-8	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	1.0000	50.0	50.0	50.0	50.0	10*	10*	11	1.0000	Yes	No	
Dibromoethane, 1,2-	000106-93-4	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	10*	100*	17	1.0000	Yes	No	
Dichlorobenzene, 1,4-	000106-46-7	10	1.00E+00	1.00E+00	2.00E-01	2.00E-01	0.4000	1.0000	5000.0*	5000.0*	5000.0*	5000.0*	1000*	100	17	1.0000	Yes	No	
Dichloroethane, 1,1-	000075-34-3	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	0	0	17	1.0000	Yes	No	
Dichloroethane, 1,2-	000107-06-2	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	10*	1	17	1.0000	Yes	No	

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** Indicates new hazardous substance in current version of chemical data (JAN04).

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity		Air Migration	Gas Mobility	Air Gas Part	
			Liquid		Non-Liquid		Persistence		Food Chain		Environment					
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt		
Dichloroethylene, 1,1-	000075-35-4	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	100*	1	17	1.0000 Yes No
Dichloroethylene, 1,2-**	000540-59-0	100	1.00E+00	1.00E-02	1.00E+00	1.00E-02	0.4000	1.0000	50.0	50.0	50.0	50.0	1	1	17	1.0000 Yes No
Dichloroethylene, cis-1,2-	000155-59-2	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	0	0	17	1.0000 Yes No
Dichloroethylene, trans-1,2-	000155-60-5	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	1	1	17	1.0000 Yes No
Dichlorophenol, 2,4-	000120-83-2	1000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007	0.0700	50.0	50.0	500.0	500.0	10000*	100	11	0.2000 Yes Yes
Dichloropropane, 1,2-	000078-87-5	1000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0*	50.0*	50.0*	50.0*	10	10*	17	1.0000 Yes No
Dichloropropene, 1,3-	000542-75-6	100*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.4000	5.0*	5.0*	5.0*	5.0*	1000	1000*	17	1.0000 Yes No
Dieldrin	000060-57-1	10000	1.00E+00	1.00E-02	2.00E-03	2.00E-05	1.0000	1.0000	50000.0	5000.0	50000.0	50000.0*	10000	10000	6	0.0020 Yes Yes
Diethyl phthalate	000084-66-2	1	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	500.0	500.0	500.0	500.0	10	100*	11	0.2000 Yes Yes
Dimethyl phenol, 2,4-	000105-67-9	100	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	0.4000	500.0	500.0	500.0	500.0	100	1000*	11	0.2000 Yes Yes
Dinitrobenzene, 1,3-	000099-65-0	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	0.4000*	5.0	5.0	5.0	5.0	100	100	6	0.0200 Yes Yes
Dioxin 1,4-**	000290-67-5	10	1.00E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	...	... No Yes
Diphenylhydrazine, 1,2-	000122-66-7	1000	1.00E+00	1.00E-02*	2.00E-01	2.00E-03*	1.0000	1.0000	50.0	50.0	50.0	50.0	1000	1000	6	0.0200 Yes Yes
Disulfoton	000298-04-4	10000	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	1.0000	0.4000	500.0	500.0	5000.0*	5000.0*	10000	10000*	6	0.0200 Yes Yes

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** Indicates new hazardous substance in current version of chemical data (JAN04).

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Migration	Gas Mobility	Air Gas Part			
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Ecotoxicity							
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt						
Endosulfan (I or II)	000115-29-7	100	1.00E+00	1.00E+00	2.00E-03	2.00E-03	1.0000	0.4000	5.0*	5000.0	50000.0	5000.0	10000	10000	11	0.0020	Yes	Yes		
Endosulfan I**	000959-98-8	100	1.00E+00	1.00E+00	2.00E-03	2.00E-03	1.0000	1.0000	500.0	500.0	50000.0	50000.0	10000	10000	11	0.0020	Yes	Yes		
Endosulfan II**	03323-65-9	100	1.00E+00	1.00E+00	...	...	1.0000	1.0000	500.0	500.0	5000.0	5000.0	10000	10000	11	0.0020	Yes	Yes
Endrin	000072-20-8	10000	1.00E+00	1.00E-02	2.00E-03	2.00E-05	1.0000	1.0000	5000.0	5000.0	50000.0	5000.0	10000	10000	6	0.0020	Yes	Yes		
Endrin aldehyde	007421-93-4	0	1.00E+00	1.00E-04*	2.00E-03*	2.00E-07*	1.0000*	1.0000*	5000.0*	5000.0*	5000.0*	5000.0*	0	0	6*	0.0020*	Yes*	Yes		
Ethyl benzene	000100-41-4	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007*	0.0700*	50.0	50.0	50.0	50.0	100	1000*	17	1.0000	Yes	No		
Ethyl chloride	000075-00-3	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007	0.0700	5.0	5.0	5.0	5.0	0	0	17	1.0000	Yes	No		
Ethylene glycol monobutyl ether (EBGE)**	000111-76-2	10	1.00E+00	1.00E+00	...	...	1.0000	1.0000	5.0	5.0	5.0	5.0	1	1	...	...	No	Yes
Fluorene	000086-73-7	100	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	1.0000	1.0000	500.0*	500.0*	5000.0	5000.0	1000	1000	11	0.0200	Yes	Yes		
Fluorine	007782-41-4	10	1.00E+00	1.00E-02	2.00E-01*	2.00E-03*	0.4000	0.0700	50000.0*	50000.0*	50000.0*	50000.0*	0	0	17	1.0000	Yes	No		
Heptachlor	000076-44-8	1000	1.00E+00	1.00E-04	2.00E-03	2.00E-07	0.4000*	0.4000*	50000.0*	50000.0*	50000.0	50000.0	10000	10000	11	0.0200	Yes	Yes		
Heptachlor epoxide, alpha, beta, gamma	001024-57-3	10000	1.00E+00	1.00E-04*	2.00E-03	2.00E-07*	1.0000	1.0000	5000.0*	5000.0*	50000.0	5000.0*	10000	10000	6	0.0200	Yes	Yes		
Heptachlorodibenzo-p-dioxin**	037871-00-4	0	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No	Yes
Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-	035822-46-9	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	No	Yes		

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air	Gas	Air	Gas
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Ecotoxicity		Migration	Mobility	Gas	Part
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt				
Heptachlorodibenzofuran 1,2,3,4,6,7,8-	067562-39-4	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	6*	0.0002*	Yes*	Yes
Heptachlorodibenzofuran 1,2,3,4,7,8,9-	055673-89-7	10000*	1.00E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	...	...	No	Yes
Hexabromobiphenyl (PBB)**	036355-01-8	1	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	6	0.0002	Yes	Yes
Hexachlorobenzene	000118-74-1	1000	1.00E+00	1.00E-02	2.00E-05	2.00E-07	1.0000	1.0000	50000.0*	50000.0	50000.0	50000.0	10000*	10000	11	0.0200	Yes	Yes
Hexachlorobutadiene	000087-68-3	10000	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	1.0000	1.0000	50.0	50000.0*	5000.0	50000.0*	10000	1000*	17	1.0000	Yes	No
Hexachlorocyclohexane, alpha-	000319-84-6	10000	1.00E+00	1.00E+00	2.00E-01	2.00E-01	1.0000	1.0000	5000.0*	50000.0*	5000.0*	50000.0*	1000*	1000	11	0.0200	Yes	Yes
Hexachlorocyclohexane, beta-	000319-85-7	100	1.00E+00	1.00E+00	2.00E-03	2.00E-03	1.0000	1.0000	500.0	500.0	5000.0*	5000.0	1000*	1000*	6	0.0020	Yes	Yes
Hexachlorodibenzo-p-dioxin 1,2,3,4,7,8-	039227-28-6	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No	Yes
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-	057653-85-7	10000	1.00E+00	1.00E-04*	...	...	1.0000*	1.0000*	5000.0	5000.0	5000.0	5000.0	0*	0*	...	...	No	Yes
Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-	019408-74-3	10000	1.00E+00	1.00E-04*	2.00E-05*	2.00E-09*	1.0000*	1.0000*	50000.0*	50000.0*	50000.0*	50000.0*	0	0	...	...	No	Yes
Hexachlorodibenzofuran 1,2,3,4,7,8-	070648-26-9	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No	Yes
Hexachlorodibenzofuran 1,2,3,6,7,8-	057117-44-9	10000	1.00E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	...	...	No	Yes
Hexachlorodibenzofuran 1,2,3,7,8,9-	072918-21-9	10000	1.00E+00	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	No	Yes

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas Migration	Air Gas Mobility	Gas Part			
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh							
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt						
Hexachlorodibenzofuran 2,3,4,6,7,8-	060851-34-5	10000	1.00E+00	...	...	...	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	...	...	No Yes
Hydrazine	000302-01-2	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000*	0.0700*	0.5	0.5	0.5	0.5	10000	100	11*	1.0000	Yes No			
Hydrogen sulfide	007783-06-4	1000*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007*	0.0700	0.5	0.5	0.5	0.5	1000	1000	17	1.0000	Yes No			
Indeno(1,2,3-cd)pyrene	000193-39-5	1000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No Yes	
Iron	007439-89-6	1	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5000.0*	5000.0*	5000.0*	5000.0*	10	10	...	...	No Yes	
Lead	007439-92-1	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	5.0*	5000.0	50000.0*	5000.0	1000	1000	...	...	No Yes	
Lead chromate**	007758-97-6	10000	1.00E+00	...	2.00E-03	...	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No Yes	
Lindane	000058-89-9	10000	1.00E+00	1.00E+00	2.00E-01	2.00E-01	1.0000	1.0000	50000.0*	5000.0*	50000.0*	5000.0*	10000	10000	11	0.0200	Yes Yes			
Manganese	007439-96-5	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	50000.0*	50000.0*	50000.0	50000.0	0	0	...	...	No Yes	
Mercury	007439-97-6	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000*	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	17	0.2000	Yes Yes			
Methoxychlor	000072-43-5	100	1.00E+00	1.00E-04*	2.00E-03	2.00E-07*	1.0000	1.0000	5.0*	50000.0*	5000.0*	50000.0*	10000	10000	6	0.0020	Yes Yes			
Methyl Parathion	000298-00-0	10000	1.00E+00	1.00E-02*	2.00E-01	2.00E-03*	1.0000	0.4000	50.0	50.0	50.0	50.0	10000	10000	6	0.0200	Yes Yes			
Methyl ethyl ketone	000078-93-3	1*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.4000	0.5	0.5	0.5	0.5	1	1	17	1.0000	Yes No			
Methyl isobutyl ketone	000108-10-1	10*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.4000	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes No			

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity		Air Gas Migration	Air Gas Mobility	Air Gas Part		
			Liquid		Non-Liquid		Persistence		Food Chain		Environment						
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt			
Methyl phenol, 4-	000106-44-5	100	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	0.0007*	0.0007*	5.0	5.0	5.0	5.0	100*	100*	11	1.0000	Yes No
Methyl tert-butyl ether (MTBE)**	001634-04-4	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	1	1	17	1.0000	Yes No
Methylene chloride (dichloromethane)	000075-09-2	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	500.0*	500.0*	1	10	17	1.0000	Yes No
Methylnaphthalene, 2-	000091-57-6	0	1.00E+00	1.00E-02	2.00E-01	2.00E-03	0.4000	0.4000	50000.0*	50000.0*	50000.0*	50000.0*	100*	1000	11	0.2000	Yes Yes
Naphthalene	000091-20-3	1000*	1.00E+00	1.00E-02*	2.00E-01	2.00E-03*	0.4000	0.4000	50000.0*	5000.0*	50000.0*	5000.0	1000	1000	11	0.2000	Yes Yes
Nickel	007440-02-0	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	0.5	500.0	500.0	500.0	100*	1000	...	...	No Yes
Nitrosodiphenylamine, N-	000086-30-6	10	1.00E+00	1.00E-02*	2.00E-01	2.00E-03*	1.0000	1.0000	500.0	500.0	500.0	500.0	100	100	6	0.0200	Yes Yes
Pentachlorodibenzo-p-dioxin 1,2,3,7,8-	040321-76-4	10000	1.00E+00	1.00E-04	2.00E-05*	2.00E-09*	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0*	0*	...	...	No Yes
Pentachlorodibenzofuran 1,2,3,7,8-	057117-41-6	0*	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No Yes
Pentachlorodibenzofuran 2,3,4,7,8-**	057117-31-4	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	0	0	6	0.0020	Yes Yes
Pentachlorophenol (PCP)	000087-86-5	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	1.0000	50000.0*	5000.0*	50000.0*	5000.0*	100	1000	6	0.0200	Yes Yes
Perchlorate**	014797-73-0	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	...	...	No Yes
Phenanthrene	000085-01-8	0	1.00E+00	1.00E-04*	2.00E-01	2.00E-05*	0.4000*	0.4000*	5000.0*	5000.0*	50000.0*	50000.0*	10000*	10000*	11	0.0200	Yes Yes
Phenol	000103-95-2	10*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007*	0.0700*	50.0*	5.0	50000.0*	5.0	10000	1000*	11	1.0000	Yes No
Plutonium	007440-07-5	0	1.00E+00	1.00E-04	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	0	0	No Yes

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility						Bioaccumulation						Ecotoxicity			
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh		Salt		Fresh	
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt	Air Gas Migration	Air Gas Mobility	Gas Part	
Polychlorinated biphenyls (PCBs)	001336-36-3	10000	1.00E+00	1.00E-04	2.00E-03	2.00E-07	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	11	0.0200	Yes Yes	
Pyrene	000129-00-0	100	1.00E+00	1.00E-04*	2.00E-01*	2.00E-05	1.0000	1.0000	50000.0*	5000.0	50000.0*	5000.0	10000	10000	6	0.0020	Yes Yes	
Radium	007440-14-4	0	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	0	0	...	...	No Yes
Radon	010043-92-2	0	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.0700	0.5	0.5	0.5	0.5	0	0	17	1.0000	Yes No	
Selenium	007782-49-2	100	1.00E+00	1.00E+00*	1.00E+00	1.00E+00*	1.0000	1.0000	50.0*	500.0*	500.0*	500.0*	1000	100	...	...	No Yes
Silver	007440-22-4	100	1.00E+00	1.00E+00	1.00E+00*	1.00E+00*	1.0000	1.0000	50.0	50000.0*	50.0	50000.0*	10000	10000	...	...	No Yes
Strontium	007440-24-6	1	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0*	5.0*	5.0*	5.0*	0	0	...	...	No Yes
Styrene	000100-42-5	10	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes No	
Tetrachlorobenzene, 1,2,4,5-	000095-94-3	10000	1.00E+00	1.00E-02	2.00E-03	2.00E-05	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	10000*	1000	17	0.2000	Yes Yes	
Tetrachlorodibenzo-p-dioxin**	041903-57-5	0	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	...	...	No Yes
Tetrachlorodibenzo-p-dioxin 2,3,7,8- (TCDD)	001746-01-6	10000	1.00E+00	1.00E-04	2.00E-05	2.00E-09	1.0000	1.0000	5000.0	5000.0	5000.0	5000.0	0*	0*	6	0.0002	Yes Yes	
Tetrachlorodibenzofuran 2,3,7,8-	051207-31-9	10000	1.00E+00	1.00E-04	2.00E-05*	2.00E-09*	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	0	0	6*	0.0020*	Yes* Yes	
Tetrachloroethane, 1,1,2,2-	000079-34-5	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	0*	0*	11	1.0000	Yes No	
Tetrachloroethylene	000127-18-4	100	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	0*	0*	17	1.0000	Yes No	

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air	Gas	Air	Gas
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Ecotoxicity		Migration	Mobility	Gas	Part
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt				
Thallium	007440-28-0	100	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	500.0	50.0	500.0	50.0	0*	0*	...	...	No	Yes
Toluene	000108-88-3	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0700*	0.0700*	50.0	50.0	5000.0*	50.0	100	100	17	1.0000	Yes	No
Toxaphene	008001-35-2	1000	1.00E+00	1.00E-04*	2.00E-03	2.00E-07*	1.0000	1.0000	50000.0	50000.0	50000.0	50000.0	10000	10000	6	0.0020	Yes	Yes
Trichlorobenzene, 1,2,4-	000120-82-1	100	1.00E+00	1.00E+00	2.00E-01	2.00E-01	0.4000	1.0000	5000.0*	500.0	5000.0*	500.0	1000	10000*	17	1.0000	Yes	No
Trichloroethane, 1,1,1-	000071-55-6	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0	5.0	5.0	5.0	10	10	17	1.0000	Yes	No
Trichloroethane, 1,1,2-	000079-00-5	1000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	100*	10	17	1.0000	Yes	No
Trichloroethylene (TCE)	000079-01-6	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	100	10	17	1.0000	Yes	No
Trichlorofluoromethane	000075-69-4	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	0	0	17	1.0000	Yes	No
Trichlorophenol, 2,4,6-	000088-06-2	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	0.4000	5000.0*	5000.0*	50000.0	50000.0	1000	100	11	0.2000	Yes	Yes
Trichloropropane, 1,2,3-	000096-18-4	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	5.0*	5.0*	5.0*	5.0*	10	10	11	1.0000	Yes	No
Trifluralin (Treflan)	001582-09-8	100	1.00E+00	1.00E-02	2.00E-01	2.00E-03	1.0000	1.0000	5000.0	5000.0	50000.0	50000.0	10000	10000*	11	0.0200	Yes	Yes
Trinitrobenzene, 1,3,5-	000099-35-4	100*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	0.0700	5.0	5.0	5.0	5.0	1000	1000	0*	0.0020*	Yes	Yes
Vanadium	007440-62-2	100	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	0	0	...	...	No	Yes
Vinyl acetate	000108-05-4	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0700*	0.0700*	0.5	0.5	0.5	0.5	10	100*	17	1.0000	Yes	No

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** Indicates new hazardous substance in current version of chemical data (JAN04).

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility						Bioaccumulation						Ecotoxicity					
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh		Salt		Fresh		Salt	
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt	Fresh	Salt	Air Gas Migration	Air Gas Mobility	Gas Part	
Vinyl chloride	000075-01-4	10000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007	0.0700	5.0	5.0	5.0	5.0	0	0	17	1.0000	Yes	No		
Xylene**	001330-20-7	100	1.00E+00	1.00E-02	1.00E+00	1.00E-02	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No		
Xylene, m-	000108-38-3	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007*	0.0700*	500.0	500.0	500.0	500.0	100	100*	17	1.0000	Yes	No		
Xylene, o-	000095-47-6	1	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	100	100	17	1.0000	Yes	No		
Xylene, p-	000106-42-3	10	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.0007*	0.0700*	50.0	50.0	50.0	50.0	100	100*	17	1.0000	Yes	No		
Zinc	007440-66-6	10	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	5.0*	50000.0	50000.0*	50000.0	10	100	No	Yes		

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas	Air Gas		
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh	Salt	Fresh	Salt	Migration	Mobility
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt	Air Gas	Gas	Part	
Americium 241	014596-10-2	10000	1.00E+00	1.00E-02	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	10000	10000	..	..	No Yes
Antimony 125(+D) (radionuclide)	014234-35-6	1000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0*	5.0*	5.0	50.0*	1000	1000	...	...	No Yes
Cadmium 109 (radionuclide)	014109-32-1	1000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	5000.0	50000.0*	50000.0*	50000.0*	1000	1000	..	..	No Yes
Cesium 137(+D) (radionuclide)	010045-97-3	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0*	50.0*	5.0*	50.0*	10000	10000	..	..	No Yes
<hr/>																		
Cobalt 57 (radionuclide)	013981-50-5	100	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5000.0*	5000.0*	5000.0	5000.0	100	100	...	...	No Yes
Cobalt 60 (radionuclide)	010198-40-0	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5000.0*	5000.0*	5000.0	5000.0	10000	10000	...	...	No Yes
Iron 55 (radionuclide)	014681-59-5	100	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5000.0*	5000.0*	5000.0*	5000.0*	100	100	...	...	No Yes
Lead 210(+D) (radionuclide)	014255-04-0	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	5.0*	5000.0	50000.0*	5000.0	10000	10000	..	..	No Yes
<hr/>																		
Manganese 54 (radionuclide)	013966-31-9	1000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	50000.0*	50000.0*	50000.0	50000.0	1000	1000	..	..	No Yes
Nickel 59 (radionuclide)	014336-70-0	100	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	0.5	500.0	500.0	500.0	100	100	..	..	No Yes
Nickel 63 (radionuclide)	013981-37-8	100	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	0.5	500.0	500.0	500.0	100	100	..	..	No Yes
Plutonium 236 (radionuclide)	015411-92-4	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	..	..	No Yes
<hr/>																		
Plutonium 238 (radionuclide)	013981-16-3	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	..	..	No Yes
Plutonium 239 (radionuclide)	015117-48-3	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	..	..	No Yes
Plutonium 240 (radionuclide)	014119-33-6	10000	1.00E+00	1.00E-04	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	No Yes	

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas Migration	Air Gas Mobility	Gas Part	
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh					
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt	Fresh	Salt		
Plutonium 241(+D) (radionuclide)	014119-32-5	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	...	...	No Yes
Plutonium 242 (radionuclide)	013982-10-0	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	...	...	No Yes
Plutonium 243 (radionuclide)	015706-37-3	100	1.00E+00	1.00E-04	...	...	0.0700	0.0700	500.0*	500.0*	500.0*	500.0*	100	100	...	...	No Yes
Plutonium 244(+D) (radionuclide)	014119-34-7	10000	1.00E+00	1.00E-04	...	...	1.0000	1.0000	500.0*	500.0*	500.0*	500.0*	10000	10000	...	...	No Yes
Radium 226(+D) (radionuclide)	013982-63-3	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No Yes
Radium 228(+D) (radionuclide)	015262-20-I	10000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No Yes
Radon 222 (+D)(radionuclide)	014859-67-7	1000	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.0000	0.4000	0.5	0.5	0.5	0.5	1000	1000	17	1.0000	Yes No	
Silver 108m(+D) (radionuclide)	014391-65-2	1000*	1.00E+00	1.00E+00	1.00E+00*	1.00E+00*	1.0000	1.0000	50.0	50000.0*	50.0	50000.0*	1000*	1000*	...	...	No Yes
Silver 110m (radionuclide)	014391-76-5	1000*	1.00E+00	1.00E+00	1.00E+00*	1.00E+00*	1.0000	1.0000	50.0	50000.0*	50.0	50000.0*	1000*	1000*	...	...	No Yes
Strontium 90(+D) (radionuclide)	010098-97-2	10000	1.00E+00	1.00E-02	1.00E+00	1.00E-02	1.0000	1.0000	5.0*	5.0*	5.0*	5.0*	10000	10000	...	...	No Yes
Technetium 99 (radionuclide)**	014133-76-7	1000	1.00E+00	1.00E+00	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	1000	1000	...	...	No Yes
Thallium 204 (radionuclide)	013968-51-9	1000*	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	500.0	50.0	500.0	50.0	1000*	1000*	...	...	No Yes
Thorium 227 (radionuclide)	015623-47-9	10000	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	0.4000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No Yes
Thorium 228(+D) (radionuclide)	014274-82-9	10000	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	No Yes	

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HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

28 Jan 2004

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air	Gas	Air	Gas	
			Liquid		Non-Liquid		Persistence		Food Chain		Environment		Fresh		Migration	Mobility	Gas	Part	
			Karst	Non-Karst	Karst	Non-Karst	River	Lake	Fresh	Salt	Fresh	Salt	Fresh	Salt					
Thorium 229(+D) (radionuclide)	015594-54-4	10000	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Thorium 230 (radionuclide)	014269-63-7	10000	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Thorium 231 (radionuclide)	014932-40-2	1000*	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	0.4000	0.0700	0.5*	0.5*	0.5*	0.5*	1000*	1000*	...	...	No	Yes
Thorium 232 (radionuclide)	007440-29-1	10000	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Thorium 234 (radionuclide)	015065-10-8	10000*	1.00E+00	1.00E-02*	1.00E+00	1.00E-02*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000*	10000*	...	...	No	Yes
Tritium	010028-17-8	100	1.00E+00	1.00E+00	...	...	1.0000	1.0000	0.5	0.5	0.5	0.5	100	100	17	1.0000	Yes	No
Uranium 232 (radionuclide)	014158-29-3	10000	1.00E+00	1.00E+00*	2.00E-01*	2.00E-01*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Uranium 233 (radionuclide)	013968-55-3	10000	1.00E+00	1.00E+00*	2.00E-01*	2.00E-01*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Uranium 234 (radionuclide)	013966-29-5	10000	1.00E+00	1.00E+00*	2.00E-01*	2.00E-01*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Uranium 235(+D) (radionuclide)	015117-96-1	10000	1.00E+00	1.00E+00*	2.00E-01*	2.00E-01*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Uranium 236(+D) (radionuclide)	013982-70-2	10000	1.00E+00	1.00E+00*	2.00E-01*	2.00E-01*	1.0000	1.0000	0.5*	0.5*	0.5*	0.5*	10000	10000	...	...	No	Yes
Uranium 238(+D) (radionuclide)	007440-61-1	10000	1.00E+00	1.00E+00*	2.00E-01*	2.00E-01*	1.0000	1.0000	5000.0*	5000.0*	5000.0*	5000.0*	10000	10000	...	...	No	Yes
Zinc 65 (radionuclide)	013982-39-3	1000	1.00E+00	1.00E-02	1.00E+00*	1.00E-02*	1.0000	1.0000	5.0*	50000.0	50000.0*	50000.0	50000.0	1000	1000	No	Yes

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water				Surface Water Pathway Food Chain				Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic		CCC (µg/L) *	CCC (µg/L) *
			Fresh	Salt		Fresh	Salt	Fresh	Salt	Fresh	Salt		
Acenaphthene	000083-32-9	...	2.2E+0	...	...	8.1E+1	...	...	...	...	...	...	...
Acenaphthylene	000208-96-8	...	...	...	...	...	...	...	...	...	...	...	...
Acetone	000067-64-1	...	3.3E+1*	...	...	1.2E+3*	...	...	...	...	...	...	...
Acrolein	000107-02-8	...	1.8E-2*	...	...	6.8E-1*	...	...	...	...	...	...	...
Acrylamide	000079-06-1	...	7.3E-3	1.9E-5	...	2.7E-1	7.0E-4	...	...	...	...	...	...
Alachlor**	015972-60-8	2.0E-3	3.6E-1	1.1E-3	...	1.4E+1	3.9E-2	...	...	...	...	...	...
Aldrin	000309-00-2	...	1.1E-3	5.0E-6	3.0E-1	4.1E-2	1.9E-4	3.0E+0 ^G	1.3E+0 ^G	...	...	...	...
Aluminum	007429-90-5	...	...	...	...	...	...	7.5E+2 ^{G2, I2}	...	8.7E+1 ^{G2, I2, L2}	...	...	...
Americium**	007440-35-9	...	...	...	...	...	...	...	...	...	...	...	...
Aniline	000062-53-3	...	...	1.5E-2	...	...	5.5E-1	...	...	...	...	...	...
Anthracene	000120-12-7	...	1.1E+1	...	...	4.1E+2	...	...	...	...	...	...	...
Antimony	007440-36-0	6.0E-3	1.5E-2	...	...	5.4E-1	...	...	...	...	...	...	...
Arsenic	007440-38-2	1.0E-2*	1.1E-2	5.7E-5	...	4.1E-1	2.1E-3	3.4E+2 ^{A, D, K}	6.9E+1 ^{A, D, bb}	1.5E+2 ^{A, D, K}	3.6E+1 ^{A, D, bb}
Asbestos	001332-21-4	7.0E+0 million fibers/L

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway			Surface Water Pathway			Surface Water Pathway				
		Drinking Water		Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic	
		MCL/MCLG (mg/L)							Fresh	Salt	Fresh	Salt
Barium	007440-39-3	2.0E+0	2.6E+0	...	...	9.5E+1	...	...	...	...	...	...
Benz(a)anthracene	000056-55-3	...	...	1.2E-4	...	...	4.3E-3	...	...	...	...	...
Benzene	000071-43-2	5.0E-3	1.5E-1*	1.5E-3	...	5.4E+0*	5.7E-2*	...	...	...	...	...
Benzidine	000092-87-5	...	1.1E-1	3.7E-7	...	4.1E+0	1.4E-5	...	...	...	...	...
Benzo(a)pyrene	000050-32-8	2.0E-4	...	1.2E-5	...	...	4.3E-4	...	...	...	...	...
Benzo(g,h,i)perylene	000191-24-2	...	...	...	...	...	...	...	...	...	...	...
Benzo(j,k)fluorene (Fluoranthene)	000206-44-0	...	1.5E+0	...	...	5.4E+1	...	...	...	...	...	...
Benzo(k)fluoranthene	000207-08-9	...	...	1.2E-3	...	...	4.3E-2	...	...	...	...	...
Beryllium	007440-41-7	4.0E-3	7.3E-2*	...*	...	2.7E+0*	...*	...	...	...	...	...
Bis (2-ethylhexyl) phthalate	000117-81-7	6.0E-3	7.3E-1	6.1E-3	...	2.7E+1	2.3E-1	...	...	...	...	...
Boron	007440-42-8	...	3.3E+0	...	...	1.2E+2	...	...	...	...	...	...
Bromodichloromethane	000075-27-4	...*	7.3E-1	1.4E-3	...	2.7E+1	5.1E-2	...	...	...	...	...
Butylbenzyl phthalate	000085-68-7	...	7.3E+0	...	...	2.7E+2	...	...	...	...	...	...
Cadmium	007440-43-9	5.0E-3	1.8E-2	6.8E-1	...	2.0E+0 ^{D, E, K, bb}	4.0E+1 ^{D, bb}	2.5E-1 ^{D, E, K, bb}	8.8E+0 ^{D, bb}	

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *	Chronic CCC (µg/L) *		
			Fresh	Salt		Fresh	Salt	Fresh	Salt		
Carbazole	000086-74-8	...	...	4.3E-3	...	...	1.6E-1	...	...	...	...
Carbon disulfide	000075-15-0	...	3.7E+0	...	...	1.4E+2	...	...	...	...	...
Carbon tetrachloride	000056-23-5	5.0E-3	2.6E-2	6.6E-4	...	9.5E-1	2.4E-2	...	...	...	...
Cesium	007440-46-2	...	...	...	...	...	...	...	...	...	...
Chlordane	000057-74-9	2.0E-3	1.8E-2	2.4E-4	3.0E-1	6.8E-1*	9.0E-3	2.4E+0 ^G	9.0E-2 ^G	4.3E-3 ^{G, aa}	4.0E-3 ^{G, aa}
Chlordane, alpha-	005103-71-9	...	1.8E-2*	2.4E-4*	...	6.8E-1*	9.0E-3*	...	...	...	...
Chlordane, gama-	005566-34-7	...	1.8E-2*	2.4E-4*	...	6.8E-1*	9.0E-3*	...	...	...	...
Chlorobenzene	000108-90-7	1.0E-1	7.3E-1	...	...	2.7E+1	...	...	...	...	...
Chloroform	000067-66-3	...*	3.6E-1	...*	...	1.4E+1	...*	...	...	...	...
Chromium	007440-47-3	1.0E-1	1.1E-1*	...	...	4.1E+0*	...	...	...	...	...
Chromium(III)	016065-83-1	...	5.5E+1*	...	...	2.0E+3*	...	5.7E+2 ^{D, E, K}	...	7.4E+1 ^{D, E, K}	...
Chromium(VI)	018540-29-9	...	1.1E-1*	4.1E+0*	...	1.6E+1 ^{D, K}	1.1E+3 ^{D, bb}	1.1E+1 ^{D, K}	5.0E+1 ^{D, bb}
Chrysene	000218-01-9	1.2E-2	4.3E-1

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic	
								Fresh	Salt	Fresh	Salt
Cobalt	007440-48-4	...	...	...	...	...	...	...	...	...	...
Copper	007440-50-8	1.3E+0	...	...	...	...	...	1.3E+1	D, E, K, cc	4.8E+0	D, cc, ff
Cumene	000098-82-8	...	3.7E+0*	...	...	1.4E+2*	...	...	...	9.0E+0	D, E, K, cc
Cyanamide**	000420-04-2	...	...	...	...	...	...	...	...	...	...
Cyanide	000057-12-5	2.0E-1	7.3E-1	...	...	2.7E+1	...	2.2E+1	K, Q	1.0E+0	Q, bb
DDD	000072-54-8	...	...	3.5E-4	...*	...	1.3E-2	...	...	...	...
DDE	000072-55-9	...	...	2.5E-4	5.0E+0	...	9.3E-3	...	...	...	...
DDT	000050-29-3	...	1.8E-2	2.5E-4	5.0E+0	6.8E-1	9.3E-3	1.1E+0	G, ii	1.3E-1	G, ii
Di-n-butyl phthalate	000084-74-2	...	3.7E+0	...	...	1.4E+2	...	...	...	...	...
Di-n-octyl phthalate	000117-84-0	...	7.3E-1	...	...	2.7E+1	...	...	...	...	...
Dibenz(a,h)anthracene	000053-70-3	...	...	1.2E-5	...	...	4.3E-4	...	...	...	...
Dibenzofuran	000132-64-9	...	1.5E-1*	...	...	5.4E+0*	...	...	...	...	...
Dibromo-3-chloropropane, 1,2-	000096-12-8	2.0E-4	...	6.1E-5	...	...	2.3E-3	...	...	...	...
Dibromoethane, 1,2-	000106-93-4	...*	...	1.0E-6	...	...	3.7E-5	...	...	...	...

* Indicates difference between previous version of chemical data (JUN 96) and current version of chemical data (JAN04).

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water				Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic		
			Fresh	Salt		Fresh	Salt	Fresh	Salt	Fresh	Salt	
Dichlorobenzene, 1,4-	000106-46-7	7.5E-2	..	3.5E-3	..	..	1.3E-1	..	..	..	..
Dichloroethane, 1,1-	000075-34-3	..	3.7E+0	..	..	1.4E+2	..	..	..	..	..
Dichloroethane, 1,2-	000107-06-2	5.0E-3	..	9.4E-4	..	..	3.5E-2	..	..	..	..
Dichloroethylene, 1,1-	000075-35-4	7.0E-3	1.8E+0*	..*	..	6.8E+1*	..*	..	..	..	..
Dichloroethylene, 1,2-**	000540-59-0	..	3.3E-1	..	..	1.2E+1	..	..	..	..	..
Dichloroethylene, cis-1,2-	000156-59-2	7.0E-2	3.6E-1	..	..	1.4E+1	..	..	..	..	..
Dichloroethylene, trans-1,2-	000156-60-5	1.0E-1	7.3E-1	..	..	2.7E+1	..	..	..	..	..
Dichlorophenol, 2,4-	000120-83-2	..	1.1E-1	..	..	4.1E+0	..	..	..	..	..
Dichloropropane, 1,2-	000078-87-5	5.0E-3	..	1.3E-3	..	..	4.6E-2	..	..	..	..
Dichloropropene, 1,3-	000542-75-6	..	1.1E+0*	8.5E-4	..	4.1E+1*	3.2E-2	..	..	..	..
Dieldrin	000060-57-1	..	1.8E-3	5.3E-6	3.0E-1	6.8E-2	2.0E-4	2.4E-1 ^K	7.1E-1 ^G	5.6E-2 ^{K,O}	1.9E-3 ^{G,aa}	
Diethyl phthalate	000084-66-2	..	2.9E+1	1.1E+3	
Dimethyl phenol, 2,4-	000105-67-9	..	7.3E-1	2.7E+1	

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway				Surface Water Pathway				Surface Water Pathway			
		Drinking Water		Food Chain		Environmental		Chronic					
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *	CCC (µg/L) *	Fresh	Salt	Fresh	Salt
Dinitrobenzene, 1,3-	000099-65-0	...	3.7E-3	...	...	1.4E-1	...	...	...	...	...	...	...
Dioxin 1,4-**	000290-67-5	...	...	...	...	...	...	...	...	...	...	...	...
Diphenylhydrazine, 1,2-	000122-66-7	...	...	1.1E-4	...	...	3.9E-3	...	...	...	...	...	...
Disulfoton	000298-04-4	...	1.5E-3	...	...	5.4E-2	...	...	...	...	...	...	...
Endosulfan (I or II)	000115-29-7	...	2.2E-1	...	...	8.1E+0	...	...	...	...	...	...	...
Endosulfan I**	000959-98-8	...	2.2E-1	...	...	8.1E+0	...	2.2E-1 ^{G, Y}	3.4E-2 ^{G, Y}	5.6E-2 ^{G, Y}	8.7E-3 ^{G, Y}		
Endosulfan II**	033213-65-9	...	2.2E-1	...	...	8.1E+0	...	2.2E-1 ^{G, Y}	3.4E-2 ^{G, Y}	5.6E-2 ^{G, Y}	8.7E-3 ^{G, Y}		
Endrin	000072-20-8	2.0E-3	1.1E-2	...	...	4.1E-1	...	8.6E-2 ^K	3.7E-2 ^G	3.6E-2 ^{K, O}	2.3E-3 ^{G, aa}		
Endrin aldehyde	007421-93-4	...	...	...	...	...	...	...	...	...	...	...	...
Ethyl benzene	000100-41-4	7.0E-1	3.7E+0	...	...	1.4E+2	...	...	...	...	...	...	...
Ethyl chloride	000075-00-3	...	...	...	...	...	...	...	...	...	...	...	...
Ethylene glycol monobutyl ether (EBGE)**	000111-76-2	...	1.8E+1	6.8E+2
Fluorene	000086-73-7	...	1.5E+0	5.4E+1
Fluorine	007782-41-4	...	2.2E+0	8.1E+1

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water				Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic		
								Fresh	Salt	Fresh	Salt	
Heptachlor	000076-44-8	4.0E-4	1.8E-2	1.9E-5	3.0E-1	6.8E-1	7.0E-4	5.2E-1 ^G	5.3E-2 ^G	3.8E-3 ^{G, aa}	3.6E-3 ^{G, aa}	
Heptachlor epoxide, alpha, beta, gamma	001024-57-3	2.0E-4	4.7E-4	9.4E-6	3.0E-1	1.8E-2	3.5E-4	5.2E-1 ^{G, V}	5.3E-2 ^{G, V}	3.8E-3 ^{G, V, aa}	3.6E-3 ^{G, V, aa}	
Heptachlorodibenzo-p-dioxin**	037871-00-4	...	...	...	...	...	...	...	...	...	...
Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-	035822-46-9	...	...	5.7E-7	...	...	2.1E-5	...	...	...	...
Heptachlorodibenzofuran 1,2,3,4,6,7,8-	067562-39-4	...	...	5.7E-7	...	...	2.1E-5	...	...	...	...
Heptachlorodibenzofuran 1,2,3,4,7,8,9-	055673-89-7	...	...	5.7E-7*	...	...	2.1E-5*	...	...	...	...
Hexabromobiphenyl (PBB)**	036355-01-8	...	...	...	...	...	...	...	...	...	...
Hexachlorobenzene	000118-74-1	1.0E-3	2.9E-2	5.3E-5	...	1.1E+0	2.0E-3	...	...	...	...
Hexachlorobutadiene	000087-68-3	...	7.3E-3	1.1E-3	...	2.7E-1	4.0E-2	...	...	...	...
Hexachlorocyclohexane, alpha-	000319-84-6	...	...	1.4E-5	...	...	5.0E-4	...	...	...	...
Hexachlorocyclohexane, beta-	000319-85-7	...	...	4.7E-5	...	...	1.8E-3	...	...	...	...
Hexachlorodibenzo-p-dioxin 1,2,3,4,7,8-	039227-28-6	...	...	1.4E-8	...	...	5.3E-7	...	...	...	...
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-	057653-85-7	1.4E-8	5.3E-7	
Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-	019408-74-3	1.4E-8	5.1E-7	

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water				Surface Water Pathway Food Chain			Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic		
								Fresh	Salt	Fresh	Salt	
Hexachlorodibenzofuran 1,2,3,4,7,8-	070648-26-9	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...	...
Hexachlorodibenzofuran 1,2,3,6,7,8-	057117-44-9	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...	...
Hexachlorodibenzofuran 1,2,3,7,8,9-	072918-21-9	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...	...
Hexachlorodibenzofuran 2,3,4,6,7,8-	060851-34-5	...	...	5.7E-8	...	...	2.1E-6	...	...	...	...	...
Hydrazine	000302-01-2	...	...	2.8E-5	...	...	1.1E-3	...	...	...	...	...
Hydrogen sulfide	007783-06-4	...	1.1E+0*	...	...	4.1E+1*	...	...	...	2.0E+0 ^{F2}	2.0E+0 ^{F2}	...
Indeno(1,2,3-cd)pyrene	000193-39-5	...	...	1.2E-4	...	...	4.3E-3	...	...	...	...	...
Iron	007439-89-6	...	...	...	...	...	...	...	...	1.0E+3 ^{F2}	...	...
Lead	007439-92-1	1.5E-2	...	...	...	...	...	6.5E+1 ^{D, E, bb, gg}	2.1E+2 ^{D, bb}	2.5E+0 ^{D, E, bb,}	8.1E+0 ^{D, bb}	...
Lead chromate**	007758-97-6	...	...	...	...	...	...	...	...	...	...	...
Lindane	000058-89-9	2.0E-4	1.1E-2	6.6E-5	...	4.1E-1	2.4E-3	9.5E-1 ^K	1.6E-1 ^G	...	...	...
Manganese	007439-96-5	...	5.1E+0	...	...	1.9E+2	...	...	...	...	...	...
Mercury	007439-97-6	2.0E-3	1.1E-2	...	1.0E+0	4.1E-1	...	1.4E+0 ^{D, K, hh}	1.8E+0 ^{D, ee, hh}	7.7E-1 ^{D, K, hh}	9.4E-1 ^{D, ee, hh}	...

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water				Surface Water Pathway Food Chain				Surface Water Pathway Environmental			
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute		Chronic			
								Fresh	Salt	Fresh	Salt		
Methoxychlor	000072-43-5	4.0E-2	1.8E-1	...	...	6.8E+0	...	...	...	...	...	3.0E-2 ^{F2}	3.0E-2 ^{F2}
Methyl Parathion	000298-00-0	...	9.1E-3	...	...	3.4E-1	...	...	...	...	...	...	...
Methyl ethyl ketone	000078-93-3	...	2.2E+1	...	...	8.1E+2	...	...	...	...	...	...	...
Methyl isobutyl ketone	000108-10-1	...	2.9E+0	...	...	1.1E+2	...	...	...	...	...	...	...
Methyl phenol, 4-	000106-44-5	...	1.8E-1	...	...	6.8E+0	...	...	...	...	...	...	...
Methyl tert-butyl ether (MTBE)**	001634-04-4	...	...	...	...	...	...	...	...	...	...	...	...
Methylene chloride (dichloromethane)	000075-09-2	5.0E-3	2.2E+0	1.1E-2	...	8.1E+1	4.2E-1	...	...	...	...	...	...
Methylnaphthalene, 2-	000091-57-6	...	...	...	...	...	...	...	...	...	...	...	...
Naphthalene	000091-20-3	...	1.5E+0	...	...	5.4E+1	...	...	...	...	...	...	...
Nickel	007440-02-0	...	7.3E-1	...	...	2.7E+1	...	4.7E+2 ^{D, E, K}	7.4E+1 ^{D, bb}	5.2E+1 ^{D, E, K}	8.2E+0 ^{D, bb}	...	...
Nitrosodiphenylamine, N-	000086-30-6	...	...	1.7E-2	...	...	6.4E-1	...	...	...	...	...	...
Pentachlorodibenzo-p-dioxin 1,2,3,7,8-	040321-76-4	...	...	1.1E-9	...	...	4.2E-8	...	...	...	...	...	...
Pentachlorodibenzofuran 1,2,3,7,8-	057117-41-6**
Pentachlorodibenzofuran 2,3,4,7,8-**	057117-31-4	5.7E-9	2.1E-7

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway				Surface Water Pathway				Surface Water Pathway			
		Drinking Water		Food Chain		Environmental		Chronic		Chronic		Chronic	
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC ($\mu\text{g}/\text{L}$) *	Chronic CCC ($\mu\text{g}/\text{L}$) *	Acute CMC ($\mu\text{g}/\text{L}$) *	Chronic CCC ($\mu\text{g}/\text{L}$) *	Acute CMC ($\mu\text{g}/\text{L}$) *	Chronic CCC ($\mu\text{g}/\text{L}$) *
Pentachlorophenol (PCP)	000087-86-5	1.0E-3	1.1E+0	7.1E-4	...	4.1E+1	2.6E-2	1.9E+1 ^{F, K}	1.3E+1 ^{bb}	1.5E+1 ^{F, K}	7.9E+0 ^{bb}	...	...
Perchlorate**	014797-73-0	...	3.7E-3	...	...	1.4E-1	...	...	...	...	...	...	...
Phenanthrene	003085-01-8	...	...	...	...	...	...	...	...	...	...	...	...
Phenol	003108-95-2	...	1.1E+1*	...	...	4.1E+2*	...	...	...	...	...	...	...
Plutonium	007440-07-5	...	...	...	...	...	...	...	...	...	...	...	...
Polychlorinated biphenyls (PCBs)	001336-36-3	5.0E-4	7.3E-4	4.3E-5	...	2.7E-2	1.6E-3	...	...	1.4E-2 ^{N, aa}	3.0E-2 ^{N, aa}	...	...
Pyrene	000129-00-0	...	1.1E+0	...	...	4.1E+1	...	...	...	...	...	...	...
Radium	007440-14-4	...	...	...	...	...	...	...	...	...	...	...	...
Radon	010043-92-2	...	...	...	...	...	...	...	...	...	...	...	...
Selenium	007782-49-2	5.0E-2	1.8E-1	...	...	6.8E+0	...	...	L, R, T	2.9E+2 ^{D, bb, dd}	5.0E+0 ^T	7.1E+1 ^{D, bb, dd}	...
Silver	007440-22-4	...	1.8E-1	6.8E+0	...	3.2E+0 ^{D, E, G}	1.9E+0 ^{D, G}
Strontium	007440-24-6
Styrene	000100-42-5	1.0E-1	7.3E+0	2.7E+2

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway			Surface Water Pathway			Surface Water Pathway			
		Drinking Water		Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Food Chain		Acute CMC (µg/L) *	Chronic CCC (µg/L) *	
		MCL/MCLG (mg/L)					Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)			
Tetrachlorobenzene, 1,2,4,5-	000095-94-3	...	1.1E-2	...	...	4.1E-1	...	...	...	...	...
Tetrachlorodibenzo-p-dioxin**	041903-57-5	...	...	...	...	...	...	...	...	...	...
Tetrachlorodibenzo-p-dioxin 2,3,7,8-(TCDD)	001746-01-6	3.0E-8	...	5.7E-10	...	...	2.1E-8	...	...	...	...
Tetrachlorodibenzofuran 2,3,7,8-	051207-31-9	...	...	5.7E-9	...	...	2.1E-7	...	...	...	...
Tetrachloroethane, 1,1,2,2-	000079-34-5	...	...	4.3E-4	...	...	1.6E-2	...	...	...	...
Tetrachloroethylene	000127-18-4	5.0E-3	3.6E-1	1.6E-3	...	1.4E+1	6.1E-2	...	...	...	...
Thallium	007440-28-0	5.0E-4	...	...	...	...	...	...	...	...	...
Toluene	000108-88-3	1.0E+0	7.3E+0	...	...	2.7E+2	...	...	...	...	...
Toxaphene	008001-35-2	3.0E-3	...	7.7E-5	...	...	2.9E-3	7.3E-1	2.1E-1	2.0E-4 ^{aa}	2.0E-4 ^{aa}
Trichlorobenzene, 1,2,4-	000120-82-1	7.0E-2	3.6E-1	...	...	1.4E+1	...	...	...	...	...
Trichloroethane, 1,1,1-	000071-55-6	2.0E-1	...	...	...	...	...	...	...	...	...
Trichloroethane, 1,1,2-	000079-00-5	3.0E-3	1.5E-1	1.5E-3	...	5.4E+0	5.5E-2	...	...	...	...
Trichloroethylene (TCE)	000079-01-6	5.0E-3	...	7.7E-3	2.9E-1
Trichlorofluoromethane	000075-69-4	...	1.1E+1	4.1E+2

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	Ground Water/Surface Water Pathway Drinking Water			Surface Water Pathway Food Chain			Surface Water Pathway Environmental				
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *	Chronic CCC (µg/L) *	Fresh	Salt	
Trichlorophenol, 2,4,6-	000088-06-2	...	...	7.7E-3	...	...	2.9E-1	...	...	...	...	...
Trichloropropane, 1,2,3-	000096-18-4	...	2.2E-1	1.2E-5	...	8.1E+0	4.5E-4	...	...	...	...	...
Trifluralin (Treflan)	001582-09-8	...	2.7E-1	1.1E-2	...	1.0E+1	4.1E-1	...	...	...	...	...
Trinitrobenzene, 1,3,5-	000099-35-4	...	1.1E+0*	...	...	4.1E+1*	...	...	...	...	...	...
Vanadium	007440-62-2	...	2.6E-1	...	...	9.5E+0	...	...	...	...	...	...
Vinyl acetate	000108-05-4	...	3.7E+1	...	...	1.4E+3	...	...	...	...	...	...
Vinyl chloride	000075-01-4	2.0E-3	1.1E-1*	5.7E-5	..	4.1E+0*	2.1E-3	..	...	...	...	...
Xylene**	001330-20-7	...	7.3E+0	...	...	2.7E+2	...	...	...	...	...	...
Xylene, m-	000108-38-3	1.0E+1	7.3E+1	...	...	2.7E+3	...	...	...	...	...	...
Xylene, o-	000095-47-6	1.0E+1	7.3E+1	...	...	2.7E+3	...	...	...	...	...	...
Xylene, p-	000106-42-3	1.0E+1
Zinc	007440-66-6	...	1.1E+1	4.1E+2	...	1.2E+2 ^{D, E, K}	9.0E+1 ^{D, bb}	1.2E+2 ^{D, E, K}	3.1E+1 ^{D, bb}	

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY		
		NAAQS NESHPAS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	
Acenaphthene	000083-32-9	...	...	...	4.7E+3	...	
Acenaphthylene	000208-96-8	...	...	...	...	...
Acetone	000067-64-1	...	...	...	7.0E+4*	...	
Acrolein	000107-02-8	...	2.1E-5	...	3.9E+1*	...	
Acrylamide	000079-06-1	...	...	1.9E-6	1.6E+1	1.4E-1	
Alachlor**	015972-60-8	...	...	...	7.8E+2	8.0E+0	
Aldrin	000309-00-2	...	...	5.0E-7	2.3E+0	3.8E-2	
Aluminum	007429-90-5	...	...	...	...	...
Americium**	007440-35-9	...	...	...	...	...
Aniline	000062-53-3	...	1.0E-3	...	...	1.1E+2*	
Anthracene	000120-12-7	...	...	...	2.3E+4*	...	
Antimony	007440-36-0	...	4.2E-4*	...	3.1E+1	...	
Arsenic	007440-38-2	5.7E-7	2.3E+1	4.3E-1	
Asbestos	001332-21-4	Inhal Unit Risk: 2.3E-1 fibers/mL*	

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Barium	007440-39-3	...	5.2E-4	...	5.5E+3	...
Benz(a)anthracene	000056-55-3	...	...	...	...	8.8E-1
Benzene	000071-43-2	...	3.1E-2*	3.1E-4	3.1E+2*	1.2E+1*
Benzidine	000092-87-5	...	...	3.6E-8	2.3E+2	2.8E-3
Benzo(a)pyrene	000050-32-8	...	...	...	...	8.8E-2
Benzo(g,h,i)perylene	000191-24-2	...	...	...	...	...
Benzo(j,k)fluorene (Fluoranthene)	000206-44-0	...	...	...	3.1E+3	...
Benzo(k)fluoranthene	000207-08-9	...	...	...	...	8.8E+0
Beryllium	007440-41-7	1.0E-2	2.1E+1*	1.0E-6	1.6E+2*	...*
Bis (2-ethylhexyl) phthalate	000117-81-7	...	...	...	1.6E+3	4.6E+1*
Boron	007440-42-8	...	2.1E-2	...	7.0E+3	...
Bromodichloromethane	000075-27-4	...	...	...	1.6E+3	1.0E+1
Butylbenzyl phthalate	000085-68-7	1.6E+4*	...
Cadmium	007440-43-9	...	9.4E-4*	1.4E-6	3.9E+1	...

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Carbazole	000086-74-8	...	...	...	...	3.2E+1*
Carbon disulfide	000075-15-0	...	7.3E-1	...	7.8E+3	...
Carbon tetrachloride	000056-23-5	...	2.1E-2*	1.6E-4	5.5E+1	4.9E+0
Cesium	007440-46-2	...	...	...	...	...
Chlordane	000057-74-9	...	7.3E-4*	2.4E-5	3.9E+1*	1.8E+0*
Chlordane, alpha-	005103-71-9	...	7.3E-4*	2.4E-5*	3.9E+1*	1.8E+0*
Chlordane, gama-	005566-34-7	...	7.3E-4*	2.4E-5*	3.9E+1*	1.8E+0*
Chlorobenzene	000108-90-7	...	2.1E-2	...	1.6E+3	...
Chloroform	000067-66-3	...	...	1.1E-4	7.8E+2	...*
Chromium	007440-47-3	...	8.3E-6*	...*	2.3E+2*	...
Chromium(III)	016065-83-1	...	...	...	1.2E+5*	...
Chromium(VI)	018540-29-9	...	8.3E-6*	2.0E-7	2.3E+2*	..
Chrysene	000218-01-9	8.8E+1*
Cobalt	007440-48-4
Copper	007440-50-8

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Cumene	000098-82-8	...	4.2E-1*	...	7.8E+3*	...
Cyanamide**	000420-04-2	...	...	...	...	...
Cyanide	000057-12-5	...	...	...	1.6E+3	...
DDD	000072-54-8	...	...	...	...	2.7E+0
DDE	000072-55-9	...	...	...	...	1.9E+0
DDT	000050-29-3	...	...	2.5E-5	3.9E+1	1.9E+0
Di-n-butyl phthalate	000084-74-2	...	...	...	7.8E+3	...
Di-n-octyl phthalate	000117-84-0	...	...	...	1.6E+3	...
Dibenz(a,h)anthracene	000053-70-3	...	...	...	...	8.8E-2
Dibenzofuran	000132-64-9	...	...	...	3.1E+2*	...
Dibromo-3-chloropropane, 1,2-	000096-12-8	...	2.1E-4	3.5E-3	...	4.6E-1
Dibromoethane, 1,2-	000106-93-4	...	2.1E-4	1.1E-5	...	7.5E-3
Dichlorobenzene, 1,4-	000106-46-7	...	8.3E-1	2.7E+1*
Dichloroethane, 1,1-	000075-34-3	...	5.2E-1*	...	7.8E+3	...

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HAZARD RANKING SYSTEM
 Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY		
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	
Dichloroethane, 1,2-	000107-06-2	...	...	9.4E-5	...	...	7.0E+0
Dichloroethylene, 1,1-	000075-35-4	...	2.1E-1*	7.1E-6	3.9E+3*	...	...
Dichloroethylene, 1,2-*	000540-59-0	...	...	...	7.0E+2	...	...
Dichloroethylene, cis-1,2-	000156-59-2	...	...	...	7.8E+2	...	...
Dichloroethylene, trans-1,2-	000156-60-5	...	...	...	1.6E+3	...	...
Dichlorophenol, 2,4-	000120-83-2	...	...	...	2.3E+2	...	...
Dichloropropane, 1,2-	000078-87-5	...	4.2E-3	...	...	...	9.4E+0
Dichloropropene, 1,3-	000542-75-6	...	2.1E-2	6.1E-4	2.3E+3*	...	6.4E+0*
Dieldrin	000060-57-1	...	...	5.3E-7	3.9E+0	...	4.0E-2
Diethyl phthalate	000084-66-2	...	...	...	6.3E+4*	...	...
Dimethyl phenol, 2,4-	000105-67-9	...	...	...	1.6E+3	...	...
Dinitrobenzene, 1,3-	000099-65-0	...	...	...	7.8E+0	...	...
Dioxin 1,4-**	000290-67-5
Diphenylhydrazine, 1,2-	000122-66-7	1.1E-5	8.0E-1
Disulfoton	000298-04-4	3.1E+0

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HAZARD RANKING SYSTEM
 Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHPAS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Endosulfan (I or II)	000115-29-7	...	...	...	4.7E+2	...
Endosulfan I**	000959-98-8	...	...	...	4.7E+2	...
Endosulfan II**	033213-65-9	...	...	...	4.7E+2	...
Endrin	000072-20-8	...	...	...	2.3E+1	...
Endrin aldehyde	007421-93-4	...	...	...	...	...
Ethyl benzene	000100-41-4	...	1.0E+0	...	7.8E+3	...
Ethyl chloride	000075-00-3	...	1.0E+1	...	...	...
Ethylene glycol monobutyl ether (EBGE)**	000111-76-2	...	2.1E-1	...	3.9E+4	...
Fluorene	000086-73-7	...	...	...	3.1E+3	...
Fluorine	007782-41-4	...	...	...	4.7E+3	...
Heptachlor	000076-44-8	...	...	1.9E-6	3.9E+1	1.4E-1
Heptachlor epoxide, alpha, beta, gamma	001024-57-3	...	...	9.4E-7	1.0E+0	7.0E-2
Heptachlorodibenzo-p-dioxin**	037871-00-4
Heptachlorodibenzo-p-dioxin 1,2,3,4,6,7,8-	035822-46-9	5.7E-8	...	4.3E-3

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Heptachlorodibenzofuran 1,2,3,4,6,7,8-	067562-39-4	...	...	5.7E-8	...	4.3E-3
Heptachlorodibenzofuran 1,2,3,4,7,8,9-	055673-89-7	...	...	5.7E-8*	...	4.3E-3*
Hexabromobiphenyl (PBB)**	036355-01-8	...	...	...	...	...
Hexachlorobenzene	000118-74-1	...	...	5.3E-6	6.3E+1	4.0E-1
Hexachlorobutadiene	000087-68-3	...	...	1.1E-4	1.6E+1	8.2E+0
Hexachlorocyclohexane, alpha-	000319-84-6	...	...	1.4E-6	...	1.0E-1
Hexachlorocyclohexane, beta-	000319-85-7	...	...	4.6E-6	...	3.5E-1
Hexachlorodibenzo-p-dioxin 1,2,3,4,7,8-	039227-28-6	...	...	1.4E-9	...	1.1E-4
Hexachlorodibenzo-p-dioxin 1,2,3,6,7,8-	057653-85-7	...	...	1.4E-9	...	1.1E-4
Hexachlorodibenzo-p-dioxin 1,2,3,7,8,9-	019408-74-3	...	...	1.9E-9	...	1.0E-4
Hexachlorodibenzofuran 1,2,3,4,7,8-	070648-26-9	...	...	5.7E-9	...	4.3E-4
Hexachlorodibenzofuran 1,2,3,6,7,8-	057117-44-9	...	...	5.7E-9	...	4.3E-4
Hexachlorodibenzofuran 1,2,3,7,8,9-	072918-21-9	5.7E-9	...	4.3E-4
Hexachlorodibenzofuran 2,3,4,6,7,8-	060851-34-5	5.7E-9	...	4.3E-4

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Hydrazine	000302-01-2	...	...	5.0E-7	...	2.1E-1
Hydrogen sulfide	007783-06-4	...	2.1E-3	...	2.3E+3*	...
Indeno(1,2,3-cd)pyrene	000193-39-5	...	...	...	...	8.8E-1
Iron	007439-89-6	...	...	...	...	...
Lead	007439-92-1	1.5E+0	...	...	...	...
Lead chromate**	007758-97-6	...	...	...	...	..
Lindane	000058-89-9	...	...	...	2.3E+1	4.9E-1
Manganese	007439-96-5	...	5.2E-5	...	1.1E+4	...
Mercury	007439-97-6	...	3.1E-4	...	2.3E+1	...
Methoxychlor	000072-43-5	...	...	...	3.9E+2	...
Methyl Parathion	000298-00-0	...	...	...	2.0E+1	...
Methyl ethyl ketone	000078-93-3	...	5.2E+0*	...	4.7E+4*	...
Methyl isobutyl ketone	000108-10-1	...	3.1E+0*	...	6.3E+3	...
Methyl phenol, 4-	000106-44-5	3.9E+2	...
Methyl tert-butyl ether (MTBE)**	001634-04-4	...	3.1E+0

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HAZARD RANKING SYSTEM
 Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Methylene chloride (dichloromethane)	000075-09-2	...	3.1E+0	5.2E-3	4.7E+3	8.5E+1*
Methylnaphthalene, 2-	000091-57-6	...	...	...	...	...
Naphthalene	000091-20-3	...	3.1E-3*	...	3.1E+3	...
Nickel	007440-02-0	...	...	...	1.6E+3	...
Nitrosodiphenylamine, N-	000086-30-6	...	...	...	...	1.3E+2*
Pentachlorodibenzo-p-dioxin 1,2,3,7,8-	040321-76-4	...	...	1.1E-10	...	8.5E-6
Pentachlorodibenzofuran 1,2,3,7,8-	057117-41-6	...	...	...*	...	...*
Pentachlorodibenzofuran 2,3,4,7,8-**	057117-31-4	...	...	5.7E-10	...	4.3E-5
Pentachlorophenol (PCP)	000087-86-5	...	...	...	2.3E+3	5.3E+0
Perchlorate**	014797-73-0	...	...	...	7.8E+0	...
Phenanthrene	000085-01-8	...	...	...	...	...
Phenol	000108-95-2	...	...	...	2.3E+4*	...
Plutonium	007440-07-5
Polychlorinated biphenyls (PCBs)	001336-36-3	2.4E-5*	1.6E+0	3.2E-1*

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HAZARD RANKING SYSTEM
 Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Pyrene	000129-00-0	...	...	...	2.3E+3	..
Radium	007440-14-4	...	...	...	...	..
Radon	010043-92-2	...	...	...	...	..
Selenium	007782-49-2	...	...	...	3.9E+2	..
Silver	007440-22-4	...	...	...	3.9E+2	..
Strontium	007440-24-6	...	...	...	4.7E+4*	..
Styrene	000100-42-5	...	1.0E+0	...	1.6E+4*	..
Tetrachlorobenzene, 1,2,4,5-	000095-94-3	...	...	...	2.3E+1	..
Tetrachlorodibenzo-p-dioxin**	041903-57-5	...	...	...	...	..
Tetrachlorodibenzo-p-dioxin 2,3,7,8- (TCDD)	001746-01-6	...	...	5.7E-11	...	4.3E-6
Tetrachlorodibenzofuran 2,3,7,8-	051207-31-9	...	...	5.7E-10	...	4.3E-5
Tetrachloroethane, 1,1,2,2-	000079-34-5	...	...	4.2E-5	...	3.2E+0
Tetrachloroethylene	000127-18-4	7.8E+2	1.2E+1
Thallium	007440-28-0
Toluene	000108-88-3	...	4.2E-1	...	1.6E+4*	..

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HAZARD RANKING SYSTEM
 Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY		
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (ng/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	
Toxaphene	008001-35-2	...	...	7.6E-6	...	...	5.8E-1
Trichlorobenzene, 1,2,4-	000120-82-1	...	2.1E-1	...	7.8E+2	...	...
Trichloroethane, 1,1,1-	000071-55-6	...	2.3E+0*	...	...	...	...
Trichloroethane, 1,1,2-	000079-00-5	...	...	1.5E-4	3.1E+2	1.1E+1	
Trichloroethylene (TCE)	000079-01-6	...	...	...	...	...	5.8E+1*
Trichlorofluoromethane	000075-69-4	...	7.3E-1	...	2.3E+4*	...	...
Trichlorophenol, 2,4,6-	000088-06-2	...	...	7.8E-4	...	...	5.8E+1*
Trichloropropane, 1,2,3-	000096-18-4	...	...	...	4.7E+2	9.1E-2	
Trifluralin (Treflan)	001582-09-8	...	...	...	5.9E+2	8.3E+1*	
Trinitrobenzene, 1,3,5-	000099-35-4	...	...	...	2.3E+3*	...	...
Vanadium	007440-62-2	...	...	...	5.5E+2	...	...
Vinyl acetate	000108-05-4	...	2.1E-1	...	7.8E+4*	...	...
Vinyl chloride	000075-01-4	...	1.0E-1*	2.8E-4	2.3E+2*	4.3E-1*	
Xylene**	001330-20-7	...	1.0E-1	...	1.6E+4	...	

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	AIR PATHWAY			SOIL PATHWAY	
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)
Xylene, m-	000108-38-3	1.6E+5*	...
Xylene, o-	000095-47-6	1.6E+5*	...
Xylene, p-	000106-42-3
Zinc	007440-66-6	2.3E+4*	...

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	DRINKING WATER		FOOD CHAIN	AIR	SOIL		
		MCL (pCi/L)	Cancer Risk Screen Conc (pCi/L)			UMTRCA (pCi/kg)	Cancer Risk Soil Ing (pCi/kg)	Cancer Risk Soil Gam (pCi/kg)
Americium 241	014596-10-2	1.5E+1*	4.6E-1*	1.3E+1*	1.7E-4*	..	3.7E+3*	..
Antimony 125(+D) (radionuclide)	014234-35-6	3.0E+2*	9.3E+0*	2.4E+2*	2.5E-1*	..	6.0E+4*	..
Cadmium 109 (radionuclide)	014109-32-1	6.0E+2*	9.5E+0*	2.6E+2*	2.2E-1*	..	7.0E+4*	..
Cesium 137(+D) (radionuclide)	010045-97-3	2.0E+2*	1.6E+0*	4.7E+1*	4.0E-1*	..	1.8E+4*	..
Cobalt 57 (radionuclide)	013981-50-5	1.0E+3*	4.6E+1*	1.2E+3*	2.3E+0*	..	2.9E+5*	..
Cobalt 60 (radionuclide)	010198-40-0	1.0E+2*	3.0E+0*	7.9E+1*	1.3E-1*	..	2.0E+4*	..
Iron 55 (radionuclide)	014681-59-5	2.0E+3*	5.5E+1*	1.5E+3*	6.0E+0*	..	3.8E+5*	..
Lead 210(+D) (radionuclide)	014255-04-0	..	3.7E-2	5.1E-1*	3.4E-4	..	3.0E+2*	..
Manganese 54 (radionuclide)	013966-31-9	3.0E+2*	2.1E+1*	5.7E+2*	8.1E-1*	..	1.5E+5*	..
Nickel 59 (radionuclide)	014336-70-0	3.0E+2*	1.8E+2*	4.5E+3*	1.0E+1*	..	1.1E+6*	..
Nickel 63 (radionuclide)	013981-37-8	5.0E+1*	7.1E+1*	1.9E+3*	2.9E+0*	..	4.4E+5*	..
Plutonium 236 (radionuclide)	015411-92-4	..	6.4E-1	1.8E+1*	2.1E-4*	..	4.6E+3*	..
Plutonium 238 (radionuclide)	013981-16-3	1.5E+1*	3.6E-1*	1.0E+1*	1.4E-4*	..	2.9E+3*	..
Plutonium 239 (radionuclide)	015117-48-3	1.5E+1*	3.5E-1*	1.0E+1*	1.4E-4*	..	2.9E+3*	..
Plutonium 240 (radionuclide)	014119-33-6	1.5E+1*	3.5E-1*	1.0E+1*	1.4E-4*	..	2.9E+3*	..

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	DRINKING WATER		FOOD CHAIN	AIR	SOIL		
		MCL (pCi/L)	Cancer Risk Screen Conc (pCi/L)	Cancer Risk Screen Conc (pCi/kg)	Cancer Risk Screen Conc (pCi/m ³)	UMTRCA (pCi/kg)	Cancer Risk Soil Ing (pCi/kg)	Cancer Risk Soil Gam (pCi/kg)
Plutonium 241(+D) (radionuclide)	014119-32-5	...	2.7E+1*	7.7E+2*	1.4E-2*	...	2.4E+5*	...
Plutonium 242 (radionuclide)	013982-10-0	1.5E+1*	3.7E-1*	1.1E+1*	1.5E-4*	...	3.0E+3*	...
Plutonium 243 (radionuclide)	015706-37-3	...	1.0E+2*	2.5E+3*	1.6E+1*	...	5.9E+5*	...
Plutonium 244(+D) (radionuclide)	014119-34-7	1.5E+1*	3.5E-1*	9.8E+0*	1.6E-4*	...	2.7E+3*	...
Radium 226(+D) (radionuclide)	013982-63-3	5.0E+0*	1.2E-1	3.4E+0*	4.1E-4	...	1.1E+3*	...
Radium 228(+D) (radionuclide)	015262-20-1	5.0E+0*	4.6E-2*	1.2E+0*	9.1E-4*	...	3.5E+2*	...
Radon 222 (+D)(radionuclide)	014859-67-7	...	...	...	6.3E-1	...	...	...
Silver 108m(+D) (radionuclide)	014391-65-2	...	5.8E+0*	1.6E+2*	1.8E-1*	...	4.1E+4*	...
Silver 110m (radionuclide)	014391-76-5	9.0E+1*	4.8E+0*	1.3E+2*	1.7E-1*	...	3.4E+4*	...
Strontium 90(+D) (radionuclide)	010098-97-2	8.0E+0*	6.4E-1*	1.8E+1*	4.2E-2*	...	5.5E+3*	...
Technetium 99 (radionuclide)**	014133-76-7	9.0E+2	1.7E+1	4.4E+2	3.4E-1*	...	1.0E+5	...
Thallium 204 (radionuclide)	013968-51-9	3.0E+2*	8.1E+0*	2.1E+2*	1.9E+0*	...	5.2E+4*	...
Thorium 227 (radionuclide)	015623-47-9	...	1.0E+0*	2.5E+1*	1.4E-4*	...	5.8E+3*	...
Thorium 228(+D) (radionuclide)	014274-82-9	1.5E+1*	1.6E-1	4.2E+0*	3.3E-5*	...	9.8E+2*	...

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HAZARD RANKING SYSTEM
Hazardous Substance Benchmarks

28 Jan 2004

Substance Name	CAS Number	DRINKING WATER		FOOD CHAIN	AIR	SOIL		
		MCL (pCi/L)	Cancer Risk Screen Conc (pCi/L)			Cancer Risk Screen Conc (pCi/kg)	UMTRCA (pCi/kg)	Cancer Risk Soil Ing (pCi/kg)
Thorium 229(+D) (radionuclide)	015594-54-4	1.5E+1*	9.0E-2	2.5E+0*	2.1E-5*	...	6.2E+2*	...
Thorium 230 (radionuclide)	014269-63-7	1.5E+1*	5.2E-1*	1.5E+1*	1.7E-4*	...	3.9E+3*	...
Thorium 231 (radionuclide)	014932-40-2	...	2.2E+1*	5.4E+2*	3.1E+0*	...	1.2E+5*	...
Thorium 232 (radionuclide)	007440-29-1	1.5E+1*	4.7E-1*	1.3E+1*	1.1E-4*	...	3.4E+3*	...
Thorium 234 (radionuclide)	015065-10-8	...	2.1E+0*	5.8E+1*	1.6E-1*	...	1.2E+4*	...
Tritium	010028-17-8	...	4.3E+2*	1.2E+4*	2.4E+1*	...	3.6E+6*	...
Uranium 232 (radionuclide)	014158-29-3	2.0E+1*	1.6E-1*	4.6E+0*	2.4E-4*	...	1.4E+3*	...
Uranium 233 (radionuclide)	013968-55-3	2.0E+1*	6.6E-1*	1.8E+1*	4.1E-4*	...	5.0E+3*	...
Uranium 234 (radionuclide)	013966-29-5	2.0E+1*	6.7E-1*	1.8E+1*	4.2E-4*	...	5.0E+3*	...
Uranium 235(+D) (radionuclide)	015117-96-1	2.0E+1*	6.6E-1*	1.8E+1*	4.7E-4*	...	4.9E+3*	...
Uranium 236(+D) (radionuclide)	013982-70-2	2.0E+1*	7.1E-1*	1.9E+1*	4.5E-4*	...	5.3E+3*	...
Uranium 238(+D) (radionuclide)	007440-61-1	2.0E+1*	5.5E-1*	1.5E+1*	5.1E-4*	...	3.8E+3*	...
Zinc 65 (radionuclide)	013982-39-3	3.0E+2*	4.1E+0*	1.1E+2*	8.2E-1*	...	3.2E+4*	...

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Footnote Code	Footnote Description
A	This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.
B	This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.
C	This criterion is based on carcinogenicity of 10^4 risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10^{-5} , move the decimal point in the recommended criterion one place to the right).
D	Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria," October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR§131.36(b)(1). Conversion Factors applied in the table can be found in Appendix A to the Preamble- Conversion Factors for Dissolved Metals (which is attached below).
E	The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardness may be calculated from the following: CMC (dissolved) = $\exp\{m_A [\ln(\text{hardness})] + b_A\}$ (CF), or CCC (dissolved) = $\exp\{m_C [\ln(\text{hardness})] + b_C\}$ (CF) and the parameters specified in Appendix B- Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent (which is attached below).
F	Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = $\exp(1.005(\text{pH}) - 4.869)$; CCC = $\exp(1.005(\text{pH}) - 5.134)$. Values displayed in table correspond to a pH of 7.8.
G	This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/5-80-046), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.
H	No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the 1986 <i>Quality Criteria for Water</i> . Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.
I	This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).
J	This fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175 kg/day.

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Footnote Code	Footnote Description
K	This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the <i>1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water</i> , (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.
L	The CMC = $1/[(f1/CMC1) + (f2/CMC2)]$ where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.82 µg/l, respectively.
M	EPA is currently reassessing the criteria for arsenic.
N	This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)
O	The derivation of the CCC for this pollutant (Endrin) did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
P	Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.
Q	This recommended water quality criterion is expressed as µg free cyanide (as CN)/L.
R	This value for selenium was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change substantially in the near future.
S	This recommended water quality criterion for arsenic refers to the inorganic form only.
T	This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996- CMC or 0.922- CCC) that was used in the GLI to convert this to a value that is expressed in terms of dissolved metal.
U	The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
V	This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
W	Although EPA has not published a completed criteria document for butylbenzyl phthalate it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.
X	There is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.
Y	This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
Z	A more stringent MCL has been issued by EPA. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.
aa	This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated biphenyls (EPA 440/5-80-068), Toxaphene (EPA 440/5-86-006). This CCC is currently based on the Final Residue Value (FRV) procedure. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.

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Footnote Code	Footnote Description
bb	This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (<i>Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses</i> , PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 882-R-01-001), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5-84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene (EPA 440/5-86-006), Zinc (EPA 440/5-87-003).
cc	When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
dd	The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 µg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.
ee	This recommended water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5-84-026, January 1985). The saltwater CCC of 0.025 µg/L given on page 23 of the criteria document is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
ff	This recommended water quality criterion was derived in <i>Ambient Water Quality Criteria Saltwater Copper Addendum</i> (Draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60FR22228- 222237, May 4, 1995).
gg	EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.
hh	This recommended water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is methylmercury, this criterion will probably be under protective. In addition, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived.
ii	This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
F2	The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).
G2	This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (<i>Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses</i> , PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chloropyrifos (EPA 440/5-86-005).
I2	This value for aluminum is expressed in terms of total recoverable metal in the water column.
L2	There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH= 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured.

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Conversion Factors for Dissolved Metals				
Metal	Conversion Factor Freshwater CMC	Conversion Factor Freshwater CCC	Conversion Factor Saltwater CMC	Conversion Factor Saltwater CMC
Arsenic	1.000	1.000	1.000	1.000
Cadmium	1.136672-[$(\ln \text{hardness})(0.041838)$]	1.101672-[$(\ln \text{hardness})(0.041838)$]	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	1.46203-[$(\ln \text{hardness})(0.145712)$]	1.46203-[$\ln \text{hardness}(0.145712)$]	0.951	0.951
Mercury	0.85	0.85	0.85	0.85
Nickel	0.998	0.997	0.990	0.990
Selenium	--	--	0.998	0.998
Silver	0.85	--	0.85	--
Zinc	0.978	0.986	0.946	0.946

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Parameters for Calculating Freshwater Dissolved Metals That are Hardness Dependent						
Chemical	m_A	b_A	m_C	b_C	Conversion Factors (CF)	
					CMC	CCC
Cadmium	1.0166	-3.924	0.7409	-4.719	1.136672-[$\ln(\text{hardness})(0.041838)$]	1.101672-[$\ln(\text{hardness})(0.041838)$]
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860
Copper	0.9422	-1.700	0.8545	-1.702	0.960	0.960
Lead	1.273	-1.460	1.273	-4.705	1.46203-[$\ln(\text{hardness})(0.145712)$]	1.46203-[$\ln(\text{hardness})(0.145712)$]
Nickel	0.8460	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.59	--	--	0.85	--
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Hardness-dependent metals' criteria may be calculated from the following:

$$\text{CMC (dissolved)} = \exp \{m_A [\ln(\text{hardness})] + b_A\} \text{ (CF)}$$

$$\text{CCC (dissolved)} = \exp \{m_C [\ln(\text{hardness})] + b_C\} \text{ (CF)}$$

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SCDM Data Version : 6/23/2006

HAZARD RANKING SYSTEM
Hazardous Substance Factor Values

30 Oct 2006

BI

Substance Name	CAS Number	Toxicity	Ground Water Mobility				Bioaccumulation				Ecotoxicity				Air Gas Migration	Air Gas Mobility	Gas Part	
			Liquid	Non-Liquid	Persistence		Food Chain		Environment		Fresh	Salt	Fresh	Salt	Fresh	Salt		
Trichloroethylene (TCE)	000079-01-6	10000*	1.00E+00	1.00E+00	1.00E+00	1.00E+00	0.4000	1.0000	50.0	50.0	50.0	50.0	100	10	17	1.0000	Yes	No

BII

Substance Name	CAS Number	Ground Water/Surface Water Pathway				Surface Water Pathway				Surface Water Pathway			
		Drinking Water			Food Chain			Environmental				Acute CMC (µg/L) *	
		MCL/MCLG (mg/L)	Reference Dose Screen Conc (mg/L)	Cancer Risk Screen Conc (mg/L)	FDAAL (ppm)	Ref. Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)	Acute CMC (µg/L) *	Chronic CCC (µg/L) *	Fresh	Salt	Fresh	Salt
Trichloroethylene (TCE)	000079-01-6	5.0E-3	1.1E-2*	2.1E-4*	...	4.1E-1*	7.9E-3*	...	...	...	...	...	...

Substance Name	CAS Number	AIR PATHWAY				SOIL PATHWAY			
		NAAQS NESHAPS (ug/m^3)	Reference Dose Screen Conc (mg/m^3)	Cancer Risk Screen Conc (mg/m^3)	Reference Dose Screen Conc (mg/kg)	Cancer Risk Screen Conc (mg/kg)			
Trichloroethylene (TCE)	000079-01-6	...	04.2E-2*	...	2.3E+1*	...	1.6E+0*		

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